UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 2

IN THE MATTER OF: Cornell-Dubilier Electronics, Inc. Superfund Site South Plainfield, Middlesex, New Jersey Dana Corporation, Settling Party	ADMINISTRATIVE SETTLEMENT AGREEMENT AND ORDER ON CONSENT FOR REMEDIAL INVESTIGATION/FEASIBILITY STUDY U.S. EPA Region 2 CERCLA Docket No. 02-2005-2024 Proceeding Under Sections 104, 107 and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. §§ 9604, 9607 and 9622.

RI/FS ADMINISTRATIVE SETTLEMENT AGREEMENT AND ORDER ON CONSENT

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ADMINISTRATIVE ORDER ON CONSENT
FOR REMEDIAL INVESTIGATION/FEASIBILITY STUDY
Operable Unit No. 3

I. JURISDICTION AND GENERAL PROVISIONS

1. This Administrative Settlement Agreement and Order on Consent ("Settlement Agreement") is entered into voluntarily by the United States Environmental Protection Agency ("EPA") and Dana Corporation ("Settling Party"). The Settlement Agreement concerns the preparation and performance of a remedial investigation and feasibility study ("RI/FS") for the operable unit consisting of groundwater and soil vapor at and emanating from the Cornell-Dubilier Electronics, Inc. Site located in South Plainfield, New Jersey ("Site") and the reimbursement of future response costs incurred by EPA in connection with the RI/FS.

2. This Settlement Agreement is issued under the authority vested in the President of the United States by Sections 104, 107 and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, 42 U.S.C. §§ 9604, 9607 and 9622 ("CERCLA"). This authority was delegated to the Administrator of EPA on January 23, 1987, by Executive Order 12580, 52 Fed. Reg. 2926 (Jan. 29, 1987), and further delegated to Regional Administrators on May 11, 1994, by EPA Delegation Nos. 14-14-C and 14-14-D. This authority was further redelegated on November 23, 2004 by the Regional Administrator of EPA Region 2 to the Director of the Emergency and Remedial Response Division by EPA Region 2 Delegation Nos. 14-14-C and 14-14-D.

3. In accordance with Sections 104(b)(2) and 122(j)(1) of CERCLA, 42 U.S.C. §§ 9604(b)(2) and 9622(j)(1), EPA notified the United States Fish & Wildlife Service, the National Oceanic and Atmospheric Administration, and the State of New Jersey on April 1, 2005, of negotiations with potentially responsible parties regarding the release of hazardous substances that may have resulted in injury to the natural resources under Federal or State trusteeship.

4. EPA and Settling Party recognize that this Settlement Agreement has been negotiated in good faith and that the actions undertaken by Settling Party in accordance with this Settlement Agreement do not constitute an admission of any liability. Settling Party does not admit, and retains the right to controvert in any subsequent proceedings other than proceedings to implement or enforce this Settlement Agreement, the validity of the findings of fact, conclusions of law and determinations in Sections V and VI of this Settlement Agreement. Settling Party agrees to comply with and be bound by the terms of this Settlement Agreement and further agrees that it will not contest the basis or validity of this Settlement Agreement or its terms.

II. PARTIES BOUND

5. This Settlement Agreement applies to and is binding upon EPA and upon Settling

Party and its successors and assigns. Any change in ownership or corporate status of Settling Party including, but not limited to, any transfer of assets or real or personal property shall not alter Settling Party's responsibilities under this Settlement Agreement.

6. Settling Party shall ensure that its contractors, subcontractors, and representatives receive a copy of this Settlement Agreement and comply with this Settlement Agreement. Settling Party shall be responsible for any noncompliance with this Settlement Agreement.

7. The undersigned representative of Settling Party certifies that he or she is fully authorized to enter into the terms and conditions of this Settlement Agreement and to execute and legally bind Settling Party to this Settlement Agreement.

III. STATEMENT OF PURPOSE

8. In entering into this Settlement Agreement, the objectives of EPA and Settling Party are: (a) to avoid the need for prolonged and complicated litigation; (b) to determine the nature and extent of contamination in groundwater and associated soil vapor and any threat to the public health, welfare, or the environment caused by the release or threatened release of hazardous substances, pollutants or contaminants at or from the Site, by conducting a RI as more specifically set forth in the Statement of Work ("SOW") attached as Appendix A to this Settlement Agreement; (c) to identify and evaluate remedial alternatives to prevent, mitigate or otherwise respond to or remedy any release or threatened release of hazardous substances, pollutants, or contaminants in groundwater and associated soil vapor at or from the Site, by conducting a FS as more specifically set forth in the SOW in Appendix A to this Settlement Agreement; and (c) to recover response and oversight costs incurred by EPA with respect to this Settlement Agreement.

9. The Work conducted under this Settlement Agreement is subject to approval by EPA and shall provide all appropriate and necessary information to assess conditions at OU3 of the Site, and evaluate alternatives to the extent necessary to select a remedy for OU3 of the Site that will be consistent with CERCLA and the National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. Part 300 ("NCP"). Settling Party shall conduct all Work under this Settlement Agreement in compliance with CERCLA, the NCP, and all applicable EPA guidances, policies, and procedures.

IV. DEFINITIONS

10. Unless otherwise expressly provided herein, terms used in this Settlement Agreement that are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in CERCLA or in such regulations. Whenever terms listed below are used in this Settlement Agreement or in the appendices attached hereto and incorporated hereunder, the following definitions shall apply:

a. "CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. §§ 9601, *et seq.*

b. "Day" shall mean a calendar day. In computing any period of time under this Settlement Agreement, where the last day would fall on a Saturday, Sunday, or federal holiday, the period shall run until the close of business of the next working day.

c. "Effective Date" shall be the effective date of this Settlement Agreement as provided in Section XXIX.

d. "EPA" shall mean the United States Environmental Protection Agency and any successor departments or agencies of the United States.

e. "Engineering Controls" shall mean constructed containment barriers or systems that control one or more of the following: downward migration, infiltration or seepage of surface runoff or rain; or natural leaching migration of contaminants through the subsurface over time. Examples include caps, engineered bottom barriers, immobilization processes, and vertical barriers.

f. "Future Response Costs" shall mean all costs, including, but not limited to, direct and indirect costs, that the United States incurs in reviewing or developing plans, reports and other items pursuant to this Settlement Agreement, verifying the Work, or otherwise implementing, overseeing, or enforcing this Settlement Agreement, including but not limited to, payroll costs, contractor costs, travel costs, laboratory costs, Agency for Toxic Substances and Disease Registry ("ATSDR") costs, the costs incurred pursuant to Paragraph 57 (costs and attorneys fees and any monies paid to secure access, including the amount of just compensation), Paragraph 43 (emergency response), and Paragraph 86 (Work takeover).

g. "Institutional Controls" shall mean non-engineered instruments, such as administrative and/or legal controls, that help to minimize the potential for human exposure to contamination and/or protect the integrity of a remedy by limiting land and/or resource use. Examples of institutional controls include easements and covenants, zoning restrictions, special building permit requirements, and well drilling prohibitions.

h. "Interest" shall mean interest at the rate specified for interest on investments of the EPA Hazardous Substance Superfund established by 26 U.S.C. § 9507, compounded annually, in accordance with 42 U.S.C. § 9607(a). The applicable rate of interest shall be the rate in effect at the time the interest accrues. The rate of interest is subject to change on October 1 of each year.

i. "NJDEP" shall mean the New Jersey Department of Environmental Protection and any successor departments or agencies of the State.

j. "National Contingency Plan" or "NCP" shall mean the National Oil and Hazardous Substances Pollution Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, and any amendments thereto.

k. "Operable Unit 3" or "OU3" shall mean contaminated groundwater and associated soil vapor at or emanating from the former Cornell Dubilier Electronics, Inc. facility, and response actions relating thereto.

l. "Settlement Agreement" shall mean this Administrative Settlement Agreement and Order on Consent, the SOW, all appendices attached hereto (listed in Section XXVII) and all documents incorporated by reference into this document, including, without limitation, EPA-approved submissions. EPA-approved submissions (other than progress reports) are incorporated into and become a part of the Settlement Agreement upon approval by EPA. In the event of conflict between this Settlement Agreement and any appendix or other incorporated documents, this Settlement Agreement shall control.

m. "Paragraph" shall mean a portion of this Settlement Agreement identified by an Arabic numeral. References to paragraphs in the SOW will be so identified (for example, "SOW paragraph 15").

n. "Parties" shall mean EPA and Settling Party.

o. "RCRA" shall mean the Resource Conservation and Recovery Act, also known as the Solid Waste Disposal Act, as amended, 42 U.S.C. §§ 6901, *et seq.*

p. "Settling Party" shall mean Dana Corporation

q. "Section" shall mean a portion of this Settlement Agreement identified by a Roman numeral. References to sections in the SOW will be so identified; for example as "SOW Section V."

r. "Site" shall mean the Cornell-Dubilier Electronics, Inc. Superfund Site, located in South Plainfield, Middlesex County, New Jersey. The Site is depicted generally on the map attached as Appendix B.

s. "State" shall mean the State of New Jersey.

t. "Statement of Work" or "SOW" shall mean the Statement of Work for development of a RI/FS for OU3 of the Site, as set forth in Appendix A to this Settlement Agreement. The Statement of Work describes the Work to be performed with more detail and more specificity than this Settlement Agreement, and is incorporated into this Settlement Agreement and is an enforceable part of this Settlement Agreement as are any modifications made thereto in accordance with this Settlement Agreement.

u. "Waste Material" shall mean (1) any "hazardous substance" under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14); (2) any pollutant or contaminant under Section 101(33) of CERCLA, 42 U.S.C. § 9601(33); and (3) any "solid waste" under Section 1004(27) of RCRA, 42 U.S.C. § 6903(27).

v. "Work" shall mean all activities Settling Party is required to perform under this Settlement Agreement, except those required by Section XIV (Retention of Records).

V. EPA FINDINGS OF FACT

11. The Cornell-Dubilier Electronics, Inc. Superfund Site consists of a former capacitor manufacturing facility of approximately 26 acres, located at 333 Hamilton Boulevard, South Plainfield, Middlesex County, New Jersey. Operable Unit ("OU") 1 of the Site consists of contaminated residential, commercial and municipal properties located in the vicinity of the facility. OU2 addresses the contaminated soils and buildings at the former Cornell-Dubilier Electronics, Inc. facility property. OU3, as defined hereinabove, addresses contaminated groundwater and associated soil vapor at or emanating from the former facility property. A further operable unit will concern contaminated sediments of the Bound Brook.

12. Settling Party was, from sometime after 1904 until June 1956, the owner of the facility property, and from sometime after 1904 until approximately 1928, the operator of the facility property. From approximately 1936 to 1962, Cornell-Dubilier Electronics, Inc. ("CDE") manufactured capacitors using polychlorinated biphenyls ("PCBs") at the facility property. CDE used trichloroethylene ("TCE") for degreasing the capacitors. During that time, hazardous substances, including PCBs and volatile organic compounds ("VOCs"), were disposed of at the Site by CDE. CDE leased the facility property from Settling Party from 1936 to 1956, purchased it in 1956, and owned the property until 1961. Since 1976, the former CDE facility property at 333 Hamilton Boulevard has been owned by D.S.C. of Newark Enterprises, Inc.

13. PCBs have been detected in the soils and in building interiors at the facility property and adjacent residential, commercial, and municipal properties, in the groundwater at the facility property, and in the surface water and sediments of the Bound Brook. High levels of VOCs have been found in the facility property soils and in groundwater. Excavations in the undeveloped portion of the facility property uncovered corroded and/or burned capacitors, white and blue crystalline powder, electrical components, and other materials. PCB concentrations from samples collected in this area are typically significantly elevated.

14. During previous EPA investigations, 96 surface soil samples and 59 subsurface soil samples were collected at the facility property, including samples collected from test pits excavated within the central portion of the property. The results of the sample analyses revealed that elevated levels of PCBs, VOCs, and inorganic chemicals were present at the Site. PCBs are the most prevalent contaminants found on the property. Surface and subsurface soil sample

analytical results indicated the presence of PCB compounds in 92 percent of the samples collected. Four individual Aroclors (-1242, -1248, -1254, and -1260) were detected at the property. Surface soil sampling revealed PCB concentrations at a maximum concentration of 51,000 ppm. Of the 96 surface soil samples collected, 46 samples had concentrations of PCBs greater than 10 ppm and 15 samples had concentrations greater than 500 ppm. Subsurface soil sampling revealed PCB concentrations at a maximum concentration of 130,000 ppm. Of the 59 subsurface soil samples collected, 16 samples had concentrations of PCBs greater than 10 ppm and 8 samples had concentrations of PCBs greater than 500 ppm.

15. Groundwater sampling results have shown that groundwater at the facility property is very highly contaminated with VOCs and PCBs. Soils at the facility property contaminated with PCBs and VOCs appear to be an ongoing source of groundwater contamination, with PCBs likely present as a result of high VOC content and cosolvency effects. Concentrations of TCE as high as 120,000 ppb and PCBs as high as 84 ppb were measured in the groundwater samples.

16. Water encountered in the overburden soil and weathered bedrock intervals by EPA was sampled to characterize potential source areas, to evaluate potential zones of contamination, and to identify potential contamination migration pathways. PCBs, PCB congeners, VOCs, SVOCs, pesticides, and metals were detected at elevated concentrations in the perched water sampled during excavation of test pits at the facility property and installation of the groundwater monitoring wells.

17. Groundwater and surface water in the area are both current and potential future sources of drinking water. The groundwater beneath the facility property is classified by NJDEP as Class IIA, a potential source of drinking water, and potable water wells for the Middlesex Water Company and the Elizabethtown Water Company facility are located within four miles of the Site.

18. PCBs and VOCs, including TCE, are the main contaminants of concern for Site groundwater. The National Toxicity Program classifies PCBs and TCE as being reasonably anticipated to be human carcinogens.

19. Pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, EPA placed the Site on the National Priorities List, set forth at 40 C.F.R. Part 300, Appendix B, by publication in the Federal Register on July 28, 1998. 63 Fed. Reg. 40182-01.

20. On March 25, 1997, EPA issued Unilateral Administrative Order ("UAO"), Index No. II-CERCLA-97-0109, to D.S.C. of Newark Enterprises, Inc. The UAO required the installation and maintenance of site stabilization measures to limit migration of contaminants from the former CDE facility. These actions included paving driveways and parking areas to minimize dust, installing a security fence, and implementing drainage controls to limit surface run-off. The work required under the UAO was substantially completed in the fall of 1997.

21. From October 1997 through May 1998, EPA collected soil and indoor dust samples from residential and commercial properties in the vicinity of the former Cornell-Dubilier Electronics facility. EPA and the Agency for Toxic Substances and Disease Registry reviewed the data obtained from this sampling and concluded that exposure to PCBs in dust and soil posed a potential health concern for residents at several of the properties tested.

22. Accordingly, EPA entered into three Administrative Orders on Consent ("AOCs") to address the removal of contaminated soil from properties in the vicinity of the former Cornell-Dubilier Electronics facility:

a. On August 6, 1998, EPA entered into an AOC, Index No. II-CERCLA-98-0115 with D.S.C. of Newark Enterprises, Inc. and CDE for removal of contaminated soil from six properties on Garibaldi Avenue, Spicer Avenue, and Hamilton Boulevard. Removal of PCB-contaminated soil from these properties was completed in September 1999.

b. On February 23, 1999, EPA entered into an AOC, Index No. II-CERCLA-99-2006 with CDE and Dana Corporation for removal of contaminated soil from seven properties on Delmore Avenue and Hamilton Boulevard. Removal of PCB-contaminated soil from these properties was completed in January 2000.

c. On June 26, 2000, EPA entered into an AOC, Index No. II-CERCLA-2000-2005 with D.S.C. of Newark Enterprises, Inc. requiring the removal of PCB-contaminated soil from one property on Spicer Avenue. D.S.C. of Newark Enterprises, Inc. failed to perform the work required under the AOC. On June 22, 2001, EPA notified D.S.C. of Newark Enterprises, Inc. that EPA would perform the work.

23. In March 1999, EPA began a RI/FS at the Site, pursuant to CERCLA and the National Contingency Plan, 40 C.F.R. Part 300. In order to study and undertake response activities in phases, EPA divided the Site into operable units. The RI/FS for OU1 was completed in August 2001, and the RI/FS for OU2 was completed in April 2004. This Settlement Agreement addresses OU3.

VI. EPA CONCLUSIONS OF LAW AND DETERMINATIONS

Based on the EPA Findings of Fact set forth above, EPA has determined that:

24. The Cornell-Dubilier Electronics, Inc. Site is a "facility" as defined in Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).

25. The PCBs and TCE found at the Site, as identified in the Findings of Fact above, are "hazardous substances" as defined in Section 101(14) of CERCLA, 42 U.S.C. § 9601(14).

26. The conditions described in Paragraphs 13 to 16 of the Findings of Fact above

constitute an actual and/or threatened "release" of a hazardous substance from the facility as defined in Section 101(22) of CERCLA, 42 U.S.C. § 9601(22).

27. Settling Party is a "person" as defined in Section 101(21) of CERCLA, 42 U.S.C. § 9601(21).

28. Settling Party is a responsible party under Sections 104, 107 and 122 of CERCLA, 42 U.S.C. §§ 9604, 9607 and 9622. Settling Party is a person who at the time of disposal of any hazardous substances was an "owner or operator" of the former Cornell-Dubilier Electronics, Inc. facility, as defined by Section 101(20) of CERCLA, 42 U.S.C. § 9601(20), and within the meaning of Section 107(a)(2) of CERCLA, 42 U.S.C. § 9607(a)(2). Settling Party therefore may be liable under Section 107(a) of CERCLA, 42 U.S.C. § 9607(a).

29. The actions required by this Settlement Agreement are necessary to protect the public health, welfare or the environment, are in the public interest, CERCLA Section 122(a), 42 U.S.C. § 9622(a), are consistent with CERCLA and the NCP, CERCLA Sections 104(a)(1) and 122(a), 42 U.S.C. §§ 9604(a)(1) and 9622(a), and will expedite effective remedial action and minimize litigation, CERCLA Section 122(a), 42 U.S.C. § 9622(a).

30. EPA has determined that Settling Party is qualified to conduct the RI/FS within the meaning of Section 104(a) of CERCLA, 42 U.S.C. § 9604(a), and will carry out the Work properly and promptly, in accordance with Sections 104(a) and 122(a) of CERCLA, 42 U.S.C. §§ 9604(a) and 9622(a), if Settling Party complies with the terms of this Settlement Agreement.

VII. SETTLEMENT AGREEMENT AND ORDER

31. Based upon the foregoing Findings of Fact and Conclusions of Law and Determinations, it is hereby Ordered and Agreed that Settling Party shall comply with all provisions of this Settlement Agreement, including, but not limited to, all appendices to this Settlement Agreement and all documents incorporated by reference into this Settlement Agreement.

VIII. DESIGNATION OF CONTRACTORS AND PROJECT COORDINATORS

32. Selection of Contractors, Personnel. All Work performed under this Settlement Agreement shall be under the direction and supervision of qualified personnel. Within 30 days of the Effective Date of this Settlement Agreement, and before the Work outlined below begins, Settling Party shall notify EPA in writing of the names, titles, and qualifications of the personnel, including contractors, subcontractors, consultants and laboratories to be used in carrying out such Work. With respect to any proposed contractor, Settling Party shall demonstrate that the proposed contractor has a quality system which complies with ANSI/ASQC E4-1994, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs," (American National Standard, January 5, 1995, or most

recent version), by submitting a copy of the proposed contractor's Quality Management Plan ("QMP"). The QMP should be prepared in accordance with "EPA Requirements for Quality Management Plans (QA/R-2)," (EPA/240/B-01/002, March 2001 or subsequently issued guidance) or equivalent documentation as determined by EPA. The qualifications of the persons undertaking the Work for Settling Party shall be subject to EPA's review, for verification that such persons meet minimum technical background and experience requirements. This Settlement Agreement is contingent on Settling Party's demonstration to EPA's satisfaction that Settling Party is qualified to perform properly and promptly the actions set forth in this Settlement Agreement. If EPA disapproves in writing of any person's technical qualifications, Settling Party shall notify EPA of the identity and qualifications of the replacements within 30 days of the written notice. If EPA subsequently disapproves of the replacement, EPA reserves the right to terminate this Settlement Agreement and to conduct a complete RI/FS, and to seek reimbursement for costs and penalties from Settling Party. During the course of the RI/FS, Settling Party shall notify EPA in writing of any changes or additions in the personnel referred to hereinabove used to carry out such Work, providing their names, titles, and qualifications. EPA shall have the same right to disapprove changes and additions to personnel as it has hereunder regarding the initial notification.

33. Within 10 days after the Effective Date, Settling Party shall designate a Project Coordinator who shall be responsible for administration of all actions by Settling Party required by this Settlement Agreement and shall submit to EPA the designated Project Coordinator's name, address, telephone number, and qualifications. To the greatest extent possible, the Project Coordinator shall be present on Site or readily available during Site Work. EPA retains the right to disapprove of the designated Project Coordinator. If EPA disapproves of the designated Project Coordinator, Settling Party shall retain a different Project Coordinator and shall notify EPA of that person's name, address, telephone number and qualifications within 21 days following EPA's disapproval. Settling Party shall have the right to change its Project Coordinator, subject to EPA's right to disapprove. Settling Party shall notify EPA 14 days before such a change is made. The initial notification may be made orally, but shall be promptly followed by a written notification. Receipt by Settling Party's Project Coordinator of any notice or communication from EPA relating to this Settlement Agreement shall constitute receipt by Settling Party.

34. EPA has designated Peter Mannino of the Emergency and Enforcement Response Division, New Jersey Superfund Branch, Region 2, as its Project Coordinator. EPA will notify Settling Party of a change of its designated Project Coordinator. Except as otherwise provided in this Settlement Agreement, Settling Party shall direct all submissions required by this Settlement Agreement to the Project Coordinator at:

Cornell-Dubilier Electronics Site Project Coordinator
New Jersey Remediation Branch
Emergency and Remedial Response Division
U.S. EPA, Region 2
290 Broadway, 19th Floor
New York, NY 10007
Attn: Peter Mannino

35. EPA's Project Coordinator shall have the authority lawfully vested in a Remedial Project Manager ("RPM") and On-Scene Coordinator ("OSC") by the NCP. In addition, EPA's Project Coordinator shall have the authority consistent with the NCP, to halt any Work required by this Settlement Agreement, and to take any necessary response action when s/he determines that conditions at the Site may present an immediate endangerment to public health or welfare or the environment. The absence of the EPA Project Coordinator from the area under study pursuant to this Settlement Agreement shall not be cause for the stoppage or delay of Work.

36. EPA shall arrange for a qualified person to assist in its oversight and review of the conduct of the RI/FS, as required by Section 104(a) of CERCLA, 42 U.S.C. Section 9604(a). Such person shall have the authority to observe Work and make inquiries in the absence of EPA, but not to modify the RI/FS Work Plan.

IX. WORK TO BE PERFORMED

37. Settling Party shall conduct the RI/FS in accordance with the provisions of this Settlement Agreement, the SOW, CERCLA, the NCP and EPA guidance, including, but not limited to the "Interim Final Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA" (OSWER Directive # 9355.3-01, October 1988 or subsequently issued guidance), "Guidance for Data Useability in Risk Assessment" (OSWER Directive #9285.7-05, October 1990 or subsequently issued guidance), and guidance referenced therein, and guidances referenced in the SOW, as may be amended or modified by EPA. The RI shall consist of collecting data to characterize site conditions, determining the nature and extent of the contamination at or from OU3 of the Site, assessing risk to human health and the environment and conducting treatability testing as necessary to evaluate the potential performance and cost of the treatment technologies that are being considered. The FS shall determine and evaluate (based on treatability testing, where appropriate) alternatives for remedial action to prevent, mitigate or otherwise respond to or remedy the release or threatened release of hazardous substances, pollutants, or contaminants at or from OU3 of the Site. The alternatives evaluated must include, but shall not be limited to, the range of alternatives described in the NCP, and shall include remedial actions that utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. In evaluating the alternatives, Settling Party shall address the factors required to be taken into account by Section 121 of CERCLA, 42 U.S.C. § 9621, and Section 300.430(e) of the NCP, 40 C.F.R. § 300.430(e). Upon request by EPA, Settling Party shall submit in electronic form all portions of any plan, report or other deliverable Settling Party is required to submit pursuant to provisions of this Settlement Agreement.

a. Scoping. EPA will determine the Site-specific objectives of the RI/FS and devise a general management approach for OU3 of the Site, as stated in the attached SOW. Settling Party shall conduct the remainder of scoping activities as described in the attached SOW and referenced guidances. At the conclusion of the project planning phase, Settling Party shall

provide EPA with the following plans, reports and other deliverables:

(1) Preliminary Conceptual Site Model. Within 45 days after the Effective Date of this Settlement Agreement, Settling Party shall submit to EPA a Preliminary Conceptual Site Model to support the development of the RI/FS Work Plan.

(2) RI/FS Work Plan. Within 45 days after EPA's authorization to proceed based on the Preliminary Conceptual Site Model, Settling Party shall submit to EPA a complete RI/FS Work Plan. Upon its approval by EPA pursuant to Section X (EPA Approval of Plans and Other Submissions), the RI/FS Work Plan shall be incorporated into and become enforceable under this Settlement Agreement. Pursuant to the SOW, the RI/FS Work Plan shall include a Field Sampling and Analysis Plan ("FSP"), a Quality Assurance Project Plan ("QAPP") and a Health and Safety Plan ("HSP") as described in Paragraphs 37(a)(2)(i) and (ii) below.

(i) Field Sampling and Analysis Plan, Quality Assurance Project Plan. Within 45 days after EPA's authorization to proceed based on the Preliminary Conceptual Site Model, Settling Party shall submit a FSP and a QAPP to EPA for review and approval pursuant to Section X (EPA Approval of Plans and Other Submissions). The FSP and QAPP shall be prepared as described in the Statement of Work and guidances, including, without limitation, "EPA Guidance for Quality Assurance Project Plans (QA/G-5)"(EPA/600/R-02/009, December 2002 or subsequently issued guidance), and "EPA Requirements for Quality Assurance Project Plans (QA/R-5)" (EPA 240/B-01/003, March 2001 or subsequently issued guidance). Upon approval by EPA pursuant to Section X (EPA Approval of Plans and Other Submissions), the FSP and QAPP shall be incorporated into and become enforceable under this Settlement Agreement.

(ii) Site Health and Safety Plan. Within 45 days after EPA's authorization to proceed based on the Preliminary Conceptual Site Model, Settling Party shall submit for EPA review and comment a Site HSP that ensures the protection of on-site workers and the public during performance of on-site Work under this Settlement Agreement. This plan shall be prepared in accordance with EPA's Standard Operating Safety Guide (PUB 9285.1-03, PB 92-963414, June 1992 or subsequently issued guidance). In addition, the HSP shall comply with all currently applicable Occupational Safety and Health Administration ("OSHA") regulations found at 29 C.F.R. Part 1910. If EPA determines that it is appropriate, the plan shall also include contingency planning. If EPA recommends revisions to the plan, Settling Party shall amend and submit to EPA a revised plan that is responsive to the directions in EPA's comments and shall implement the plan during the pendency of the RI/FS.

b. Community Relations Plan. EPA has prepared a community relations plan for the Site and will make revisions to the Plan as necessary and in accordance with EPA guidance and the NCP. As requested by EPA, Settling Party shall provide information supporting EPA's community relations plan and shall participate in the preparation of such information for dissemination to the public and in public meetings which may be held or sponsored by EPA to explain activities at or concerning the Site.

c. Site Characterization. Following EPA approval or modification of the RI/FS Work Plan, Settling Party shall implement the provisions of the RI/FS Work Plan to characterize OU3 of the Site. Settling Party shall complete Site characterization and submit all plans, reports and other deliverables in accordance with the schedules and deadlines established in this Settlement Agreement, the SOW, and/or the EPA-approved RI/FS Work Plan.

d. Baseline Human Health Risk Assessment. Settling Party will perform the Baseline Human Health Risk Assessment ("Risk Assessment") in accordance with the SOW, RI/FS Work Plan and applicable EPA guidance, including but not limited to: "Interim Final Risk Assessment Guidance for Superfund, Volume I - Human Health Evaluation Manual (Part A)," (RAGS, EPA-540-1-89-002, OSWER Directive 9285.7-01A, December 1989), "Interim Final Risk Assessment Guidance for Superfund, Volume I - Human Health Evaluation Manual (Part D, Standardized Planning, Reporting, and Review of Superfund Risk Assessments)," (RAGS, EPA 540-R-97-033, OSWER Directive 9285.7-01D, January 1998); or subsequently issued guidance.

e. Draft RI Report. In accordance with the schedule in the approved RI/FS Work Plan, Settling Party shall submit to EPA for review and approval pursuant to Section X (EPA Approval of Plans and Other Submissions), a Draft RI Report consistent with the SOW and RI/FS Work Plan. The Draft RI Report shall also contain the Risk Assessment.

f. Identification of Candidate Technologies Memorandum. This memorandum shall be submitted to EPA within 45 days after Settling Party's receipt of the last set of validated analytical results collected during the RI.

g. Treatability Studies. Settling Party shall conduct treatability studies, except where Settling Party can demonstrate to EPA's satisfaction that they are not needed, as discussed in more detail in the SOW. The major components of the treatability studies are described in the SOW. In accordance with the schedules or deadlines established in this Settlement Agreement, the SOW and/or the EPA-approved RI/FS Work Plan, Settling Party shall provide EPA with the following plans, reports, and other deliverables for review and approval pursuant to Section X (EPA Approval of Plans and Other Submissions):

(1) Treatability Testing Statement of Work. If EPA determines that treatability testing is required, within 45 days thereafter or such longer time as specified by EPA, Settling Party shall submit a Treatability Testing Statement of Work ("TTSOW").

(2) Treatability Testing Work Plan. Within 30 days after submission of the TTSOW, Settling Party shall submit a Treatability Testing Work Plan, including a schedule. The work plan may take the form of a separate Treatability Testing Work Plan, or an amendment to the RI/FS Work Plan previously submitted. The Treatability Testing Work Plan shall include a Treatability Study Field Sampling and Analysis Plan. If EPA determines that the RI/FS QAPP or HSP is not adequate for defining the activities to be performed during the treatability test, within 30 days of EPA's determination, Settling Party shall submit a Treatability Study QAPP

and/or Treatability Study HSP, as required by EPA, which may be either a separate document or an amendment to the original QAPP or HSP.

(3) Treatability Study Evaluation Report. Within 45 days after completion of any treatability testing, including receipt of final validated analytical data, Settling Party shall submit a treatability study evaluation report as provided in the TTSOW and Treatability Testing Work Plan.

h. Development and Screening of Alternatives. Settling Party shall develop an appropriate range of waste management options that will be evaluated through the development and screening of alternatives, as provided in the SOW and RI/FS Work Plan. In accordance with the schedules or deadlines established in this Settlement Agreement, the SOW and/or the EPA-approved RI/FS Work Plan, Settling Party shall provide EPA with the following deliverable for review and approval pursuant to Section X (EPA Approval of Plans and Other Submissions):

(1) Remedial Alternatives Screening Technical Memorandum and Presentation. Within 45 days after EPA's approval of the RI Report, Settling Party will present to EPA and the State a summary of the remedial action objectives and the development and preliminary screening of alternatives. Within 21 days after the presentation, Settling Party shall submit the Remedial Alternatives Screening Technical Memorandum. The Memorandum shall summarize the development and screening of remedial alternatives.

i. Detailed Analysis of Alternatives. Settling Party shall conduct a detailed analysis of remedial alternatives, as described in the SOW and RI/FS Work Plan. In accordance with the deadlines or schedules established in this Settlement Agreement, the SOW and/or the EPA-approved RI/FS Work Plan, Settling Party shall provide EPA with the following deliverables and presentation for review and approval pursuant to Section X (EPA Approval of Plans and Other Submissions):

(1) Remedial Alternatives Evaluation Technical Memorandum. Within 45 days after EPA's approval of the Remedial Alternatives Screening Technical Memorandum, Settling Party will submit a report on comparative analysis to EPA. This report shall include a discussion of the institutional controls identified in the Remedial Alternatives Screening Technical Memorandum as potential remedial actions, and shall (1) state the objectives (i.e., what will be accomplished) for the Institutional Controls; (2) determine the specific types of Institutional Controls that can be used to meet the remedial action objectives; (3) investigate when the Institutional Controls need to be implemented and/or secured and how long they must be in place; (4) research, discuss and document any agreement with the proper entities (e.g., state, local government entities, local landowners, conservation organizations, Settling Party) on exactly who will be responsible for securing, maintaining and enforcing the Institutional Controls.

(2) Draft FS Report. Within 45 days after EPA's approval of the Remedial Alternatives Evaluation Technical Memorandum, Settling Party shall submit to EPA a Draft FS Report which reflects the findings in the Risk Assessment. Settling Party shall refer to Table 6-5 of the RI/FS Guidance for report content and format. The report as amended, and the administrative record, shall provide the basis for the proposed plan under CERCLA Sections 113(k) and 117(a) by EPA, and shall document the development and analysis of remedial alternatives. Within 14 days of submitting the Draft FS Report, Settling Party will present to EPA a summary of the findings of the Draft FS Report and discuss EPA's and the State's preliminary comments and concerns.

38. Upon receipt of the Draft FS report, EPA will evaluate, as necessary, the estimates of the risk to the public and environment that are expected to remain after a particular remedial alternative has been completed and will evaluate the durability, reliability and effectiveness of any proposed Institutional Controls.

39. Modification of the RI/FS Work Plan.

a. If at any time during the RI/FS process, Settling Party identifies a need for additional data, Settling Party shall submit a memorandum documenting the need for additional data to the EPA Project Coordinator within 30 days of identification. EPA in its discretion will determine whether the additional data will be collected by Settling Party and whether it will be incorporated into plans, reports and other deliverables.

b. In the event of unanticipated or changed circumstances at OU3 of the Site, Settling Party shall notify the EPA Project Coordinator by telephone within three days of discovery of the unanticipated or changed circumstances. In the event that EPA determines that the immediate threat or the unanticipated or changed circumstances warrant changes in the RI/FS Work Plan, EPA shall modify or amend the RI/FS Work Plan in writing accordingly. Settling Party shall perform the RI/FS Work Plan as modified or amended. This Paragraph shall not alter or diminish in any way Settlement Party's responsibilities to give immediate notice to EPA under the circumstances described in Paragraph 43.

c. EPA may determine that in addition to tasks defined in the initially approved RI/FS Work Plan, other additional Work may be necessary to accomplish the objectives of the RI/FS. Settling Party agrees to perform these response actions in addition to those required by the initially approved RI/FS Work Plan, including any approved modifications, if EPA determines that such actions are necessary for a complete RI/FS.

d. Settling Party shall confirm its willingness to perform the additional Work in writing to EPA within 7 days of receipt of the EPA request. If Settling Party objects to any modification determined by EPA to be necessary pursuant to this Paragraph, Settling Party may seek dispute resolution pursuant to Section XV (Dispute Resolution). The SOW and/or RI/FS Work Plan shall be modified in accordance with the final resolution of the dispute.

e. Settling Party shall complete the additional Work according to the standards, specifications, and schedule set forth or approved by EPA in a written modification to the RI/FS Work Plan or written RI/FS Work Plan supplement. EPA reserves the right to conduct the Work itself at any point, to seek reimbursement from Settling Party, and/or to seek any other appropriate relief.

f. Nothing in this Paragraph shall be construed to limit EPA's authority to require performance of further response actions at the Site.

40. Off-Site Shipment of Waste Material. Settling Party shall, prior to any off-site shipment of Waste Material from the Site to an out-of-state waste management facility, provide written notification of such shipment of Waste Material to the appropriate state environmental official in the receiving facility's state and to EPA's Project Coordinator. However, this notification requirement shall not apply to any off-site shipments when the total volume of all such shipments will not exceed 10 cubic yards.

a. Settling Party shall include in the written notification the following information: (1) the name and location of the facility to which the Waste Material is to be shipped: (2) the type and quantity of the Waste Material to be shipped; (3) the expected schedule for the shipment of the Waste Material; and (4) the method of transportation. Settling Party shall notify the state in which the planned receiving facility is located of major changes in the shipment plan, such as a decision to ship the Waste Material to another facility within the same state, or to a facility in another state.

b. The identity of the receiving facility and state will be determined by Settling Party following the award of the contract for the RI/FS. Settling Party shall provide the information required by Subparagraph 40.a and 40.c as soon as practicable after the award of the contract and before the Waste Material is actually shipped.

c. Before shipping any hazardous substances, pollutants, or contaminants from the Site to an off-site location, Settling Party shall obtain EPA's certification that the proposed receiving facility is operating in compliance with the requirements of CERCLA Section 121(d)(3), 42 U.S.C. § 9621(d)(3), and 40 C.F.R. § 300.440. Settling Party shall only send hazardous substances, pollutants, or contaminants from the Site to an off-site facility that complies with the requirements of the statutory provision and regulation cited in the preceding sentence.

41. Meetings. Settling Party shall make presentations at, and participate in, meetings at the request of EPA during the initiation, conduct, and completion of the RI/FS. In addition to discussion of the technical aspects of the RI/FS, topics will include anticipated problems or new issues. Meetings will be scheduled at EPA's discretion.

42. Progress Reports. In addition to the plans, reports and other deliverables set forth in this Settlement Agreement, Settling Party shall provide to EPA monthly progress reports by the 10th day of the following month. At a minimum, with respect to the preceding month, these progress reports shall (1) describe the actions which have been taken to comply with this Settlement Agreement during that month, (2) include all results of sampling and tests and all other data received by Settling Party, (3) describe Work planned for the next two months with schedules relating such Work to the overall project schedule for RI/FS completion, and (4) describe all problems encountered and any anticipated problems, any actual or anticipated delays, and solutions developed and implemented to address any actual or anticipated problems or delays.

43. Emergency Response and Notification of Releases.

a. In the event of any action or occurrence during performance of the Work which causes or threatens a release of Waste Material from the Site that constitutes an emergency situation or may present an immediate threat to public health or welfare or the environment, Settling Party shall immediately take all appropriate action. Settling Party shall take these actions in accordance with all applicable provisions of this Settlement Agreement, including, but not limited to, the Health and Safety Plan, in order to prevent, abate or minimize such release or endangerment caused or threatened by the release. Settling Party shall also immediately notify the EPA Project Coordinator or, in the event of his/her unavailability, the EPA Regional Emergency 24-hour telephone number at (732) 548-8730 of the incident or Site conditions. In the event that Settling Party fails to take appropriate response action as required by this Paragraph, and EPA takes such action instead, Settling Party shall reimburse EPA all costs of the response action not inconsistent with the NCP pursuant to Section XVIII (Payment of Response Costs).

b. In addition, in the event of any release of a hazardous substance from the Site, Settling Party shall immediately notify the EPA Project Coordinator, or the EPA Regional Emergency 24-hour telephone number at (732) 548-8730 and the National Response Center at (800) 424-8802. Settling Party shall submit a written report to EPA within 7 days after each release, setting forth the events that occurred and the measures taken or to be taken to mitigate any release or endangerment caused or threatened by the release and to prevent the reoccurrence of such a release. This reporting requirement is in addition to, and not in lieu of, reporting under Section 103(c) of CERCLA, 42 U.S.C. § 9603(c), and Section 304 of the Emergency Planning and Community Right-To-Know Act of 1986, 42 U.S.C. § 11004, *et seq.*

X. EPA APPROVAL OF PLANS AND OTHER SUBMISSIONS

44. After review of any plan, report or other item that is required to be submitted for approval pursuant to this Settlement Agreement, in a notice to Settling Party EPA shall: (a) approve, in whole or in part, the submission; (b) approve the submission upon specified

conditions; (c) modify the submission to cure the deficiencies; (d) disapprove, in whole or in part, the submission, directing that Settling Party modify the submission; or (e) any combination of the above. However, EPA shall not modify a submission without first providing Settling Party at least one notice of deficiency and an opportunity to cure within 14 days, except where to do so would cause serious disruption to the Work or where previous submission(s) have been disapproved due to material defects.

45. In the event of approval, approval upon conditions, or modification by EPA, pursuant to Subparagraph 44(a), (b), (c) or (e), Settling Party shall proceed to take any action required by the plan, report or other deliverable, as approved or modified by EPA subject only to its right to invoke the Dispute Resolution procedures set forth in Section XV (Dispute Resolution) with respect to the modifications or conditions made by EPA. Following EPA approval or modification of a submission or portion thereof, Settling Party shall not thereafter alter or amend such submission or portion thereof unless directed by EPA. In the event that EPA modifies a submission to cure the deficiencies pursuant to Subparagraph 44(c) and the submission so modified is a resubmission of the same plan, report or other deliverable which had a material defect, EPA retains the right to seek stipulated penalties, as provided in Section XVI (Stipulated Penalties).

46. Resubmission.

a. Upon receipt of a notice of disapproval, Settling Party shall, within 14 days or such longer time as specified by EPA in such notice, correct the deficiencies and resubmit the plan, report, or other deliverable for approval. Any stipulated penalties applicable to the submission, as provided in Paragraph 45 and Section XVI, shall accrue during the 14-day period or otherwise specified period but shall not be payable unless the resubmission is disapproved or modified due to a material defect as provided in Paragraphs 44 and 45.

b. Notwithstanding the receipt of a notice of disapproval, Settling Party shall proceed to take any action required by any non-deficient portion of the submission, unless otherwise directed by EPA. Implementation of any non-deficient portion of a submission shall not relieve Settling Party of any liability for stipulated penalties under Section XVI (Stipulated Penalties).

c. Settling Party shall not proceed further with any subsequent activities or tasks until receiving EPA approval, approval on condition or modification of the following deliverables: Preliminary Conceptual Site Model, RI/FS Work Plan (which includes the FSP, QAPP and HSP), Draft RI Report, Treatability Testing Work Plan, and Draft FS Report. While awaiting EPA approval, approval on condition or modification of these deliverables, Settling Party shall proceed with all other tasks and activities which may be conducted independently of these deliverables, in accordance with the schedule set forth under this Settlement Agreement, the SOW and the RI/FS Work Plan.

d. For all remaining deliverables not listed above in Subparagraph 46(c), Settling Party shall proceed with all subsequent tasks, activities and deliverables without awaiting EPA approval on the submitted deliverable. EPA reserves the right to stop Settling Party from proceeding further, either temporarily or permanently, with any task, activity or deliverable at any point during the RI/FS.

47. If EPA disapproves a resubmitted plan, report or other deliverable, or portion thereof, EPA may again direct Settling Party to correct the deficiencies. EPA shall also retain the right to modify or develop the plan, report or other deliverable. Settling Party shall implement any such plan, report, or deliverable as corrected, modified or developed by EPA, subject only to Settling Party's right to invoke the procedures set forth in Section XV (Dispute Resolution).

48. If upon resubmission, a plan, report, or other deliverable is disapproved or modified by EPA due to a material defect, Settling Party shall be deemed to have failed to submit such plan, report, or other deliverable timely and adequately unless Settling Party invokes the dispute resolution procedures in accordance with Section XV (Dispute Resolution) and EPA's action is revoked or substantially modified pursuant to a Dispute Resolution decision issued by EPA or superceded by an agreement reached pursuant to that Section. The provisions of Section XV (Dispute Resolution) and Section XVI (Stipulated Penalties) shall govern the implementation of the Work and accrual and payment of any stipulated penalties during Dispute Resolution. If EPA's disapproval or modification is not otherwise revoked, substantially modified or superceded as a result of a decision or agreement reached pursuant to the Dispute Resolution process set forth in Section XV, stipulated penalties shall accrue for such violation from the date on which the initial submission was originally required, as provided in Section XVI.

49. In the event that EPA takes over some of the tasks, but not the preparation of the RI Report or the FS Report, Settling Party shall incorporate and integrate information supplied by EPA into the final reports.

50. All plans, reports, and other deliverables submitted to EPA under this Settlement Agreement shall, upon approval or modification by EPA, be incorporated into and enforceable under this Settlement Agreement. In the event EPA approves or modifies a portion of a plan, report, or other deliverable submitted to EPA under this Settlement Agreement, the approved or modified portion shall be incorporated into and enforceable under this Settlement Agreement.

51. Neither failure of EPA to expressly approve or disapprove of Settling Party's submissions within a specified time period, nor the absence of comments, shall be construed as approval by EPA. Whether or not EPA gives express approval for Settling Party's deliverables, Settling Party is responsible for preparing deliverables acceptable to EPA.

XI. QUALITY ASSURANCE, SAMPLING, AND ACCESS TO INFORMATION

52. Quality Assurance. Settling Party shall assure that Work performed, samples taken and analyses conducted conform to the requirements of the SOW, the QAPP and guidances identified therein. Settling Party will assure that field personnel used by Settling Party is properly trained in the use of field equipment and in chain of custody procedures. Settling Party shall only use laboratories which have a documented quality system that complies with "EPA Requirements for Quality Management Plans (QA/R-2)" (EPA/240/B-01/002, March 2001) or equivalent documentation as determined by EPA.

53. Sampling.

a. All results of sampling, tests, modeling or other data (including raw data) generated by Settling Party, or on Settling Party's behalf, during the period that this Settlement Agreement is effective, shall be submitted to EPA in the next monthly progress report as described in Paragraph 42 of this Settlement Agreement. EPA will make available to Settling Party validated data generated by EPA unless it is exempt from disclosure by any federal or state law or regulation.

b. Settling Party shall verbally notify EPA at least 28 days prior to conducting significant field events as described in the SOW or RI/FS Work Plan. At EPA's verbal or written request, Settling Party shall allow split or duplicate samples to be taken by EPA (and its authorized representatives) of any samples collected in implementing this Settlement Agreement. All split samples of Settling Party shall be analyzed by the methods identified in the QAPP.

54. Access to Information.

a. Settling Party shall provide to EPA, upon request, copies of all documents and information within its possession or control or that of its contractors or agents relating to activities at OU3 of the Site or to the implementation of this Settlement Agreement, including, but not limited to, sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other documents or information related to the Work. Settling Party shall also make available to EPA, for purposes of investigation, information gathering, or testimony, its employees, agents, or representatives with knowledge of relevant facts concerning the performance of the Work.

b. Settling Party may assert business confidentiality claims covering part or all of the documents or information submitted to EPA under this Settlement Agreement to the extent permitted by and in accordance with Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), and 40 C.F.R. § 2.203(b). Documents or information determined to be confidential by EPA will be afforded the protection specified in 40 C.F.R. Part 2, Subpart B. If no claim of confidentiality accompanies documents or information when it is submitted to EPA, or if EPA has notified Settling Party that the documents or information are not confidential under the standards of

Section 104(e)(7) of CERCLA or 40 C.F.R. Part 2, Subpart B, the public may be given access to such documents or information without further notice to Settling Party. Settling Party shall segregate and clearly identify all documents or information submitted under this Settlement Agreement for which Settling Party asserts business confidentiality claims.

c. Settling Party may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If the Settling Party asserts such a privilege in lieu of providing documents, it shall provide EPA with the following: 1) the title of the document, record, or information; 2) the date of the document, record, or information; 3) the name and title of the author of the document, record, or information; 4) the name and title of each addressee and recipient; 5) a description of the contents of the document, record, or information; and 6) the privilege asserted by Settling Party. However, no documents, reports or other information created or generated pursuant to the requirements of this Settlement Agreement shall be withheld on the grounds that they are privileged.

d. No claim of confidentiality shall be made with respect to any data, including, but not limited to, all sampling, analytical, monitoring, hydrogeologic, scientific, chemical, or engineering data, or any other documents or information evidencing conditions at or around the Site.

55. In entering into this Settlement Agreement, Settling Party waives any objections to any data gathered, generated, or evaluated by EPA, the State or Settling Party in the performance or oversight of the Work that has been verified according to the quality assurance/quality control ("QA/QC") procedures required by the Settlement Agreement or any EPA-approved RI/FS Work Plans. If Settling Party objects to any other data relating to the RI/FS, Settling Party shall submit to EPA a report that specifically identifies and explains its objections, describes the acceptable uses of the data, if any, and identifies any limitations to the use of the data. The report must be submitted to EPA within 15 days of the monthly progress report containing the data.

XII. SITE ACCESS AND INSTITUTIONAL CONTROLS

56. If OU3 of the Site, or any other property where access is needed to implement this Settlement Agreement, is owned or controlled by Settling Party, Settling Party shall, commencing on the Effective Date, provide EPA and its representatives, including contractors, with access at all reasonable times to OU3 of the Site, or such other property, for the purpose of conducting any activity related to this Settlement Agreement.

57. Where any action under this Settlement Agreement is to be performed in areas owned by or in possession of someone other than Settling Party, Settling Party shall use its best efforts to obtain all necessary access agreements within 45 days after the Effective Date, or as otherwise specified in writing by the EPA Project Coordinator. Settling Party shall immediately notify EPA if after using its best efforts it is unable to obtain such access agreements. For

purposes of this Paragraph, "best efforts" includes the payment of reasonable sums of money in consideration of access. Settling Party shall describe in writing its efforts to obtain access. If Settling Party cannot obtain access agreements, EPA may either (i) obtain access for Settling Party or assist Settling Party in gaining access, to the extent necessary to effectuate the response actions described herein, using such means as EPA deems appropriate; (ii) perform those tasks or activities with EPA contractors; or (iii) terminate the Settlement Agreement. Settling Party shall reimburse EPA for all costs and attorney's fees incurred by the United States in obtaining such access, in accordance with the procedures in Section XVIII (Payment of Response Costs). If EPA performs those tasks or activities with EPA contractors and does not terminate the Settlement Agreement, Settling Party shall perform all other tasks or activities not requiring access to that property, and shall reimburse EPA for all costs incurred in performing such tasks or activities. Settling Party shall integrate the results of any such tasks or activities undertaken by EPA into its plans, reports and other deliverables.

58. Notwithstanding any provision of this Settlement Agreement, EPA retains all of its access authorities and rights, including enforcement authorities related thereto, under CERCLA, RCRA, and any other applicable statutes or regulations.

XIII. COMPLIANCE WITH OTHER LAWS

59. Settling Party shall comply with all applicable local, state and federal laws and regulations when performing the RI/FS. No local, state, or federal permit shall be required for any portion of any action conducted entirely on-site, including studies, if the action is selected and carried out in compliance with Section 121 of CERCLA, 42 U.S.C. § 9621. Where any portion of the Work is to be conducted off-site and requires a federal or state permit or approval, Settling Party shall submit timely and complete applications and take all other actions necessary to obtain and to comply with all such permits or approvals. This Settlement Agreement is not, and shall not be construed to be, a permit issued pursuant to any federal or state statute or regulation.

XIV. RETENTION OF RECORDS

60. During the pendency of this Settlement Agreement and for a minimum of 10 years after commencement of construction of any remedial action, Settling Party shall preserve and retain all non-identical copies of documents, records, and other information (including documents, records, or other information in electronic form) now in its possession or control or which come into its possession or control that relate in any manner to the performance of the Work or the liability of any person under CERCLA with respect to the Site, regardless of any corporate retention policy to the contrary. Until 10 years after commencement of construction of any remedial action, Settling Party shall also instruct its contractors and agents to preserve all documents, records, and other information of whatever kind, nature or description relating to performance of the Work.

61. At the conclusion of this document retention period, Settling Party shall notify EPA at least 90 days prior to the destruction of any such documents, records or other information, and, upon request by EPA, Settling Party shall deliver any such documents, records, or other information to EPA. Settling Party may assert that certain documents, records, and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If Settling Party asserts such a privilege, it shall provide EPA with the following: 1) the title of the document, record, or other information; 2) the date of the document, record, or other information; 3) the name and title of the author of the document, record, or other information; 4) the name and title of each addressee and recipient; 5) a description of the subject of the document, record, or other information; and 6) the privilege asserted by Settling Party. However, no documents, records or other information created or generated pursuant to the requirements of this Settlement Agreement shall be withheld on the grounds that they are privileged.

62. Settling Party hereby certifies that to the best of its knowledge and belief, after thorough inquiry, it has not altered, mutilated, discarded, destroyed or otherwise disposed of any records, documents or other information (other than identical copies) relating to its potential liability regarding the Site since notification of potential liability by EPA or the filing of suit against it regarding the Site and that it has fully complied with any and all EPA requests for information pursuant to Sections 104(e) and 122(e) of CERCLA, 42 U.S.C. §§ 9604(e) and 9622(e), and Section 3007 of RCRA, 42 U.S.C. § 6927.

XV. DISPUTE RESOLUTION

63. Unless otherwise expressly provided for in this Settlement Agreement, the dispute resolution procedures of this Section shall be the exclusive mechanism for resolving disputes arising under this Settlement Agreement. The Parties shall attempt to resolve any disagreements concerning this Settlement Agreement expeditiously and informally. However, the procedures set forth in this Section shall not apply to actions by EPA to enforce obligations of Settling Party that have not been disputed in accordance with this Section.

64. If Settling Party objects to any EPA action taken pursuant to this Settlement Agreement, including billings for Future Response Costs, it shall notify EPA in writing of its objection(s) within 14 days of such action, unless the objection(s) has/have been resolved informally. EPA and Settling Party shall have 20 days from EPA's receipt of Settling Party's written objection(s) to resolve the dispute (the "Negotiation Period"). The Negotiation Period may be extended at the sole discretion of EPA. Such extension may be granted verbally, but must be confirmed in writing.

65. Any agreement reached by the Parties pursuant to this Section shall be in writing and shall, upon signature by the Parties, be incorporated into and become an enforceable part of this Settlement Agreement. If the Parties are unable to reach an agreement within the Negotiation Period, an EPA management official at the level of the Director of Emergency and Remedial

Response Division, Region 2 or higher will issue a written decision. EPA's decision shall be incorporated into and become an enforceable part of this Settlement Agreement. Settling Party's obligations under this Settlement Agreement shall not be tolled by submission of any objection for dispute resolution under this Section, except for the implementation of the specific item or matter in dispute and any elements of the Work which are directly and necessarily dependent on it; provided, however, that tolling of the item or matter in dispute and any dependent elements of the Work shall not affect the accrual of penalties as provided in Paragraph 70. Following resolution of the dispute, as provided by this Section, Settling Party shall fulfill the requirement that was the subject of the dispute in accordance with the agreement reached or with EPA's decision, whichever occurs, and regardless of whether Settling Party agrees with the decision.

XVI. STIPULATED PENALTIES

66. Settling Party shall be liable to EPA for stipulated penalties in the amounts set forth in Paragraphs 67 and 68 for failure to comply with any of the requirements of this Settlement Agreement specified below unless excused under Section XVII (Force Majeure). "Compliance" by Settling Party shall include completion of the Work under this Settlement Agreement or any activities contemplated under any RI/FS Work Plan or other plan approved under this Settlement Agreement identified below, in accordance with all applicable requirements of law, this Settlement Agreement, the SOW, and any plans or other documents approved by EPA pursuant to this Settlement Agreement and within the specified time schedules established by and approved under this Settlement Agreement.

67. Stipulated Penalty Amounts - Work.

a. The following stipulated penalties shall accrue per day for any noncompliance identified in Subparagraph 67(b):

Penalty Per Violation Per Day	Period of Noncompliance
$ 1000	1st through 14th day
$ 2000	15th through 30th day
$ 3000	31st day and beyond

b. Compliance Milestones

1. Submission of the name of the Project Coordinator to EPA pursuant to Section VIII of this Settlement Agreement;
2. Payment of Future Response Costs pursuant to Section XVIII of this Settlement Agreement;
3. Payment of Stipulated Penalties pursuant to Section XVI of this

Settlement Agreement;

4. Establishing an escrow account pursuant to Paragraph 82 in the event of dispute concerning payment of Future Response Costs;
5. Establishing Assurance of Ability to Complete Work pursuant to Section XXVI of this Settlement Agreement;
6. Submission of the Preliminary Conceptual Site Model;
7. Submission and, if necessary, revision and resubmission of the RI Work Plan;
8. Submission and, if necessary, revision and resubmission of the Treatability Testing Statement of Work;
9. Submission and, if necessary, revision and resubmission of the Treatability Testing Work Plan;
10. Submission and, if necessary, revision and resubmission of the Treatability Study Evaluation Report;
11. Submission and, if necessary, revision and resubmission of the RI Report;
12. Submission and, if necessary, revision and resubmission of the FS Report.

68. Stipulated Penalty Amounts - Reports. Stipulated penalties shall accrue in the amount of $500 per violation per day for failure to submit timely or adequate monthly progress reports pursuant to Paragraph 42 or any interim deliverables not specifically referred to in Paragraph 67.

69. In the event that EPA assumes performance of a portion or all of the Work pursuant to Paragraph 86 of Section XX (Reservation of Rights by EPA), Settling Party shall be liable for a stipulated penalty in the amount of $200,000.

70. All penalties shall begin to accrue on the day after the complete performance is due or the day a violation occurs, and shall continue to accrue through the final day of the correction of the noncompliance or completion of the activity. However, stipulated penalties shall not accrue: (1) with respect to a deficient submission under Section X (EPA Approval of Plans and Other Submissions), during the period, if any, beginning on the 31st day after EPA's receipt of such submission until the date that EPA notifies Settling Party of any deficiency; (2) with respect to a decision by the EPA Management Official designated in Paragraph 65 of Section XV (Dispute Resolution), during the period, if any, beginning on the 21st day after the Negotiation Period begins until the date that the EPA Management Official issues a final decision regarding such dispute; or (3) if such decision affirms Settling Party's position in the dispute, or revokes EPA's action. Nothing herein shall prevent the simultaneous accrual of separate penalties for separate violations of this Settlement Agreement.

71. Following EPA's determination that Settling Party has failed to comply with a requirement of this Settlement Agreement, EPA may give Settling Party written notification of

the same and describe the noncompliance. EPA may send Settling Party a written demand for the payment of the penalties. However, penalties shall accrue as provided in the preceding Paragraph regardless of whether EPA has notified Settling Party of a violation.

72. All penalties accruing under this Section shall be due and payable to EPA within 30 days of Settling Party's receipt from EPA of a demand for payment of the penalties, unless Settling Party invokes the dispute resolution procedures in accordance with Section XV (Dispute Resolution). All payments to EPA under this Section shall be paid in accordance with the payment procedures set forth in Paragraph 80, shall indicate that the payment is for stipulated penalties, and shall reference the EPA Region and Site/Spill ID Number 02-GZ, EPA Docket Number CERCLA-02-2005-2024, and the name and address of the party making payment. At the time of payment, Settling Party shall send notice that payment has been made to the EPA Project Coordinator, Site Attorney and Regional Financial Management Officer in accordance with Section 80(b).

73. The payment of penalties shall not alter in any way Settling Party's obligation to complete performance of the Work required under this Settlement Agreement.

74. Penalties shall continue to accrue as provided in Paragraph 70 during any dispute resolution period, but need not be paid until 15 days after the dispute is resolved by agreement or by receipt of EPA's decision.

75. If Settling Party fails to pay stipulated penalties when due, EPA may institute proceedings to collect the penalties, as well as Interest. Settling Party shall pay Interest on the unpaid balance, which shall begin to accrue on the date of demand made pursuant to Paragraph 72.

76. Nothing in this Settlement Agreement shall be construed as prohibiting, altering, or in any way limiting the ability of EPA to seek any other remedies or sanctions available by virtue of Settling Party's violation of this Settlement Agreement or of the statutes and regulations upon which it is based, including, but not limited to, penalties pursuant to Section 122(l) of CERCLA, 42 U.S.C. § 9622(l), and punitive damages pursuant to Section 107(c)(3) of CERCLA, 42 U.S.C. § 9607(c)(3). Provided, however, that EPA shall not seek civil penalties pursuant to Section 122(l) of CERCLA or punitive damages pursuant to Section 107(c)(3) of CERCLA for any violation for which a stipulated penalty is provided herein, except in the case of willful violation of this Settlement Agreement or in the event that EPA assumes performance of a portion or all of the Work pursuant to Section XX (Reservation of Rights by EPA), Paragraph 86. Notwithstanding any other provision of this Section, EPA may, in its unreviewable discretion, waive any portion of stipulated penalties that have accrued pursuant to this Settlement Agreement.

XVII. FORCE MAJEURE

77. Settling Party agrees to perform all requirements of this Settlement Agreement within the time limits established under this Settlement Agreement, unless the performance is delayed by a *force majeure*. For purposes of this Settlement Agreement, *force majeure* is defined as any event arising from causes beyond the control of Settling Party or of any entity controlled by Settling Party, including but not limited to its contractors and subcontractors, which delays or prevents performance of any obligation under this Settlement Agreement despite Settling Party's best efforts to fulfill the obligation. *Force majeure* does not include financial inability to complete the Work or increased cost of performance.

78. If any event occurs or has occurred that may delay the performance of any obligation under this Settlement Agreement, whether or not caused by a *force majeure* event, Settling Party shall notify EPA orally within 48 hours of when Settling Party first knew that the event might cause a delay. Within 7 days thereafter, Settling Party shall provide to EPA in writing an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; Settling Party's rationale for attributing such delay to a *force majeure* event if it intends to assert such a claim; and a statement as to whether, in the opinion of Settling Party, such event may cause or contribute to an endangerment to public health, welfare or the environment. Failure to comply with the above requirements shall preclude Settling Party from asserting any claim of *force majeure* for that event for the period of time of such failure to comply and for any additional delay caused by such failure.

79. If EPA agrees that the delay or anticipated delay is attributable to *a force majeure* event, the time for performance of the obligations under this Settlement Agreement that are affected by the *force majeure* event will be extended by EPA for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the *force majeure* event shall not, of itself, extend the time for performance of any other obligation. If EPA does not agree that the delay or anticipated delay has been or will be caused by a *force majeure* event, EPA will notify Settling Party in writing of its decision. If EPA agrees that the delay is attributable to a *force majeure* event, EPA will notify Settling Party in writing of the length of the extension, if any, for performance of the obligations affected by the *force majeure* event. Settling Party may invoke the procedures set forth in Section XV (Dispute Resolution) to dispute EPA's determination that the delay is not attributable to a *force majeure* event.

XVIII. PAYMENT OF RESPONSE COSTS

80. Payments of Future Response Costs.

a. Settling Party shall pay EPA all Future Response Costs not inconsistent with the NCP. On a periodic basis, EPA will send Settling Party a bill requiring payment that includes

a SCORPIOS Report. Settling Party shall make all payments within 30 days of Settling Party's receipt of each bill requiring payment, except as otherwise provided in Paragraph 82 of this Settlement Agreement. Settling Party shall make all payments required by this Paragraph by EFT to Mellon Bank, Pittsburgh, Pennsylvania, by providing the following information to its bank:

(i) Amount of payment;
(ii) Title of Mellon Bank Account to receive the payment: EPA;
(iii) Account Code for Mellon Bank Account receiving the payment: 9108544;
(iv) Mellon Bank ABA Routing Number: 043000261;
(v) Name of Settling Party;
(vi) Docket Number CERCLA-02-2005-2024; and
(vii) Site/Spill Identifier: 02-GZ.

b. At the time of payment, Settling Party shall send notice that payment has been made to the EPA Project Coordinator, Site Attorney, and the Regional Financial Management Officer, as follows:

Cornell-Dubilier Electronics Site Project Coordinator
New Jersey Remediation Branch
Emergency and Remedial Response Division
U.S. EPA, Region 2
290 Broadway, 19th Floor
New York, NY 10007
Attn: Peter Mannino

Cornell-Dubilier Electronics Site Attorney
Office of Regional Counsel
New Jersey Superfund Branch
U.S. EPA, Region 2
290 Broadway, 17th Floor
New York, NY 10007
Attn: Sarah Flanagan

Chief, Financial Management Branch
U.S. EPA, Region 2
290 Broadway, 29th Floor
New York, NY 10007-1866

c. The total amount to be paid by Settling Party pursuant to Subparagraph 80(a) shall be deposited in the Cornell-Dubilier Electronics, Inc. Site Special Account within the EPA Hazardous Substance Superfund to be retained and used to conduct or finance response actions at or in connection with the Site, or to be transferred by EPA to the EPA Hazardous Substance Superfund.

81. If Settling Party does not pay Future Response Costs within 30 days of Settling Party's receipt of a bill, Settling Party shall pay Interest on the unpaid balance of Future Response Costs. The Interest on unpaid Future Response Costs shall begin to accrue on the date of the bill and shall continue to accrue until the date of payment. If EPA receives a partial payment, Interest shall accrue on any unpaid balance. Payments of Interest made under this Paragraph shall be in addition to such other remedies or sanctions available to the United States by virtue of Settling Party's failure to make timely payments under this Section, including but not limited to, payments of stipulated penalties pursuant to Section XVI. Settling Party shall make all payments required by this Paragraph in the manner described in Paragraph 80.

82. Settling Party may contest payment of any Future Response Costs under Paragraph 80 if it determines that EPA has made a mathematical error, or that a cost item was included in the bill that is outside the scope of the definition of Future Response Costs as set forth in Paragraph 10(f), or if it believes EPA incurred excess costs as a direct result of an EPA action that was inconsistent with the NCP. Such objection shall be made in writing within 30 days of receipt of the bill and must be sent to the EPA Project Coordinator. Any such objection shall specifically identify the contested Future Response Costs and the basis for objection. In the event of an objection, Settling Party shall within the 30 day period pay all uncontested Future Response Costs to EPA in the manner described in Paragraph 80. Simultaneously, Settling Party shall establish an interest-bearing escrow account in a federally-insured bank duly chartered in the State of New Jersey and remit to that escrow account funds equivalent to the amount of the contested Future Response Costs. Settling Party shall send to the EPA Project Coordinator a copy of the transmittal letter and check paying the uncontested Future Response Costs, and a copy of the correspondence that establishes and funds the escrow account, including, but not limited to, information containing the identity of the bank and bank account under which the escrow account is established as well as a bank statement showing the initial balance of the escrow account. Simultaneously with establishment of the escrow account, Settling Party shall initiate the Dispute Resolution procedures in Section XV (Dispute Resolution). If EPA prevails in the dispute, within 5 days of the resolution of the dispute, Settling Party shall pay the sums due (with accrued interest) to EPA in the manner described in Paragraph 80. If Settling Party prevails concerning any aspect of the contested costs, Settling Party shall pay that portion of the costs (plus associated accrued interest) for which it did not prevail to EPA in the manner described in Paragraph 80. Settling Party shall be disbursed any balance of the escrow account. The dispute resolution procedures set forth in this Paragraph in conjunction with the procedures set forth in Section XV (Dispute Resolution) shall be the exclusive mechanisms for resolving disputes regarding Settling Party's obligation to reimburse EPA for its Future Response Costs.

XIX. COVENANT NOT TO SUE BY EPA

83. In consideration of the actions that will be performed and the payments that will be made by Settling Party under the terms of this Settlement Agreement, and except as otherwise specifically provided in this Settlement Agreement, EPA covenants not to sue or to take administrative action against Settling Party pursuant to Sections 106 and 107(a) of CERCLA, 42 U.S.C. §§ 9606 and 9607(a), for the Work performed under this Settlement Agreement and for

recovery of Future Response Costs. This covenant not to sue shall take effect upon the Effective Date and is conditioned upon the complete and satisfactory performance by Settling Party of all obligations under this Settlement Agreement, including, but not limited to, payment of Future Response Costs pursuant to Section XVIII. This covenant not to sue extends only to Settling Party and does not extend to any other person.

XX. RESERVATIONS OF RIGHTS BY EPA

84. Except as specifically provided in this Settlement Agreement, nothing herein shall limit the power and authority of EPA or the United States to take, direct, or order all actions necessary to protect public health, welfare, or the environment or to prevent, abate, or minimize an actual or threatened release of hazardous substances, pollutants or contaminants, or hazardous or solid waste on, at, or from the Site. Further, nothing herein shall prevent EPA from seeking legal or equitable relief to enforce the terms of this Settlement Agreement, from taking other legal or equitable action as it deems appropriate and necessary, or from requiring Settling Party or any other person in the future to perform additional activities pursuant to CERCLA or any other applicable law.

85. The covenant not to sue set forth in Section XIX above does not pertain to any matters other than those expressly identified therein. EPA reserves, and this Settlement Agreement is without prejudice to, all rights against Settling Party with respect to all other matters, including, but not limited to:

a. claims based on a failure by Settling Party to meet a requirement of this Settlement Agreement;

b. liability for costs not included within the definition of Future Response Costs;

c. liability for performance of response action other than the Work;

d. criminal liability;

e. liability for damages for injury to, destruction of, or loss of natural resources, and for the costs of any natural resource damage assessments;

f. liability arising from the past, present, or future disposal, release or threat of release of Waste Materials outside of the Site; and

g. liability for costs incurred or to be incurred by the Agency for Toxic Substances and Disease Registry related to the Site.

86. Work Takeover. In the event EPA determines that Settling Party has ceased implementation of any portion of the Work, is seriously or repeatedly deficient or late in its performance of the Work, or is implementing the Work in a manner which may cause an

endangerment to human health or the environment, EPA may assume the performance of all or any portion of the Work as EPA determines necessary. Settling Party may invoke the procedures set forth in Section XV (Dispute Resolution) to dispute EPA's determination that takeover of the Work is warranted under this Paragraph. Costs incurred by EPA in performing the Work pursuant to this Paragraph shall be considered Future Response Costs that Settling Party shall pay pursuant to Section XVIII (Payment of Response Costs). Notwithstanding any other provision of this Settlement Agreement, EPA retains all authority and reserves all rights to take any and all response actions authorized by law.

XXI. COVENANT NOT TO SUE BY SETTLING PARTY

87. Settling Party covenants not to sue and agrees not to assert any claims or causes of action against the United States, or its contractors or employees, with respect to the Work, Future Response Costs, or this Settlement Agreement, including, but not limited to:

a. any direct or indirect claim for reimbursement from the Hazardous Substance Superfund established by 26 U.S.C. § 9507, based on Sections 106(b)(2), 107, 111, 112, or 113 of CERCLA, 42 U.S.C. §§ 9606(b)(2), 9607, 9611, 9612, or 9613, or any other provision of law;

b. any claim arising out of the Work or arising out of the response actions for which the Future Response Costs have or will be incurred, including any claim under the United States Constitution, the New Jersey Constitution, the Tucker Act, 28 U.S.C. § 1491, the Equal Access to Justice Act, 28 U.S.C. § 2412, as amended, or at common law; or

c. any claim against the United States pursuant to Sections 107 and 113 of CERCLA, 42 U.S.C. §§ 9607 and 9613, relating to the Work or payment of Future Response Costs.

88. These covenants not to sue shall not apply in the event the United States brings a cause of action or issues an order pursuant to the reservations set forth in Paragraphs 85(b), (c), and (e) - (g), but only to the extent that Settling Party's claims arise from the same response action, response costs, or damages that the United States is seeking pursuant to the applicable reservation.

89. Nothing in this Settlement Agreement shall be deemed to constitute approval or preauthorization of a claim within the meaning of Section 111 of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).

XXII. OTHER CLAIMS

90. By issuance of this Settlement Agreement, the United States and EPA assume no liability for injuries or damages to persons or property resulting from any acts or omissions of Settling Party.

91. Except as expressly provided in Section XIX (Covenant Not to Sue by EPA), nothing in this Settlement Agreement constitutes a satisfaction of or release from any claim or cause of action against Settling Party or any person not a party to this Settlement Agreement, for any liability such person may have under CERCLA, other statutes, or common law, including but not limited to any claims of the United States for costs, damages and interest under Sections 106 and 107 of CERCLA, 42 U.S.C. §§ 9606 and 9607.

92. No action or decision by EPA pursuant to this Settlement Agreement shall give rise to any right to judicial review except as set forth in Section 113(h) of CERCLA, 42 U.S.C. § 9613(h).

XXIII. CONTRIBUTION

93. The Parties agree that this Settlement Agreement constitutes an administrative settlement for purposes of Section 113(f)(2) of CERCLA, 42 U.S.C. §§ 9613(f)(2), and that Settling Party is entitled, as of the Effective Date, to protection from contribution actions or claims as provided by Sections 113(f)(2) and 122(h)(4) of CERCLA, 42 U.S.C. §§ 9613(f)(2) and 9622(h)(4), for "matters addressed" in this Settlement Agreement. The "matters addressed" in this Settlement Agreement are the Work and Future Response Costs.

94. The Parties agree that this Settlement Agreement constitutes an administrative settlement for purposes of Section 113(f)(3)(B) of CERCLA, 42 U.S.C. § 9613(f)(3)(B), pursuant to which Settling Party has resolved its liability to the United States for the Work performed under this Settlement Agreement and for Future Response Costs.

95. Except as provided in Section XXI (Covenant Not to Sue by Settling Party), nothing in this Settlement Agreement precludes the United States or Settling Party from asserting any claims, causes of action, or demands against any person not a party to this Settlement Agreement for indemnification, contribution, or cost recovery. Nothing herein diminishes the right of the United States, pursuant to Sections 113(f)(2) and (3) of CERCLA, 42 U.S.C. §§ 9613(f)(2) and (3), to pursue any such persons to obtain additional response costs or response actions and to enter into settlements that provide contribution protection pursuant to Section 113(f)(2).

XXIV. INDEMNIFICATION

96. Settling Party shall indemnify, save and hold harmless the United States, its officials, agents, contractors, subcontractors, employees and representatives from any and all claims or causes of action arising from, or on account of negligent or other wrongful acts or omissions of Settling Party, its officers, directors, employees, agents, contractors, or subcontractors, in

carrying out actions pursuant to this Settlement Agreement. In addition, Settling Party agrees to pay the United States all costs incurred by the United States, including but not limited to attorneys fees and other expenses of litigation and settlement, arising from or on account of claims made against the United States based on negligent or other wrongful acts or omissions of Settling Party, its officers, directors, employees, agents, contractors, subcontractors and any persons acting on its behalf or under its control, in carrying out activities pursuant to this Settlement Agreement. The United States shall not be held out as a party to any contract entered into by or on behalf of Settling Party in carrying out activities pursuant to this Settlement Agreement. Neither Settling Party nor any such contractor shall be considered an agent of the United States.

97. The United States shall give Settling Party notice of any claim for which the United States plans to seek indemnification pursuant to this Section and shall consult with Settling Party prior to settling such claim.

98. Settling Party waives all claims against the United States for damages or reimbursement or for set-off of any payments made or to be made to the United States, arising from or on account of any contract, agreement, or arrangement between Settling Party and any person for performance of Work on or relating to the Site. In addition, Settling Party shall indemnify and hold harmless the United States with respect to any and all claims for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between Settling Party and any person for performance of Work on or relating to the Site.

XXV. INSURANCE

99. At least 15 days prior to commencing any on-site Work under this Settlement Agreement, Settling Party shall cause its contractors and subcontractors to secure and maintain for the duration of this Settlement Agreement, comprehensive general liability insurance with limits of $1,500,000, combined single limit, and automobile liability insurance with limits of $1,000,000, combined single limit, naming EPA as an additional insured. Within the same period, Settling Party shall cause its contractors and subcontractors to provide EPA with certificates of such insurance and a copy of each insurance policy. Settling Party shall cause its contractors and subcontractors to submit such certificates and copies of policies each year on the anniversary of the Effective Date. In addition, for the duration of the Settlement Agreement, Settling Party shall satisfy, or shall ensure that its contractors or subcontractors satisfy, all applicable laws and regulations regarding the provision of worker's compensation insurance for all persons performing the Work on behalf of Settling Party in furtherance of this Settlement Agreement.

XXVI. FINANCIAL ASSURANCE

100. Within 30 days of the Effective Date, Settling Party shall establish and maintain financial security for the benefit of EPA in the amount of $1,500,000 in one or more of the following forms, in order to secure the full and final completion of Work by Settling Party:

a. a surety bond unconditionally guaranteeing payment for and/or performance of the Work;

b. one or more irrevocable letters of credit, payable to or at the direction of EPA, issued by financial institution(s) acceptable in all respects to EPA equaling the total estimated cost of the Work;

c. a trust fund administered by a trustee acceptable in all respects to EPA;

d. a policy of insurance issued by an insurance carrier acceptable in all respects to EPA, which ensures the payment for and/or performance of the Work;

e. a corporate guarantee to perform the Work provided by one or more parent corporations or subsidiaries of Settling Party, or by one or more unrelated corporations that have a substantial business relationship with Settling Party; including a demonstration that any such company satisfies the financial test requirements of 40 C.F.R. Part 264.143(f); and/or

f. a corporate guarantee to perform the Work by Settling Party, including a demonstration that Settling Party satisfies the requirements of 40 C.F.R. Part 264.143(f).

101. Any and all financial assurance instruments provided pursuant to this Section shall be in form and substance satisfactory to EPA, determined in EPA's sole discretion. In the event that EPA determines at any time that the financial assurances provided pursuant to this Section (including, without limitation, the instrument(s) evidencing such assurances) are inadequate, Settling Party shall, within 30 days of receipt of notice of EPA's determination, obtain and present to EPA for approval one of the other forms of financial assurance listed in Paragraph 100, above. In addition, if at any time EPA notifies Settling Party that the anticipated cost of completing the Work has increased, then, within 30 days of such notification, Settling Party shall obtain and present to EPA for approval a revised form of financial assurance (otherwise acceptable under this Section) that reflects such cost increase. Settling Party's inability to demonstrate financial ability to complete the Work shall in no way excuse performance of any activities required under this Settlement Agreement.

102. If Settling Party seeks to ensure completion of the Work through a guarantee pursuant to Subparagraph 100.e. or 100.f. of this Settlement Agreement, Settling Party shall (i) demonstrate to EPA's satisfaction that the guarantor satisfies the requirements of 40 C.F.R. Part 264.143(f); and (ii) resubmit sworn statements conveying the information required by 40 C.F.R. Part 264.143(f) annually, on the anniversary of the Effective Date, to EPA. For the purposes of this Settlement Agreement, wherever 40 C.F.R. Part 264.143(f) references "sum of current closure and post-closure costs estimates and the current plugging and abandonment costs estimates," the current cost estimate of $1,500,000 for the Work at OU3 of the Site shall be used in relevant financial test calculations.

103. If, after the Effective Date, Settling Party can show that the estimated cost to

complete the remaining Work has diminished below the amount set forth in Paragraph 100 of this Section, Settling Party may, on any anniversary date of the Effective Date, or at any other time agreed to by the Parties, reduce the amount of the financial security provided under this Section to the estimated cost of the remaining Work to be performed. Settling Party shall submit a proposal for such reduction to EPA, in accordance with the requirements of this Section, and may reduce the amount of the security after receiving written approval from EPA. In the event of a dispute, Settling Party may seek dispute resolution pursuant to Section XV (Dispute Resolution). Settling Party may reduce the amount of security in accordance with EPA's written decision resolving the dispute.

104. Settling Party may change the form of financial assurance provided under this Section at any time, upon notice to and prior written approval by EPA, provided that EPA determines that the new form of assurance meets the requirements of this Section. In the event of a dispute, Settling Party may change the form of the financial assurance only in accordance with the written decision resolving the dispute.

XXVII. INTEGRATION/APPENDICES

105. This Settlement Agreement, its appendices and any deliverables, technical memoranda, specifications, schedules, documents, plans, reports (other than progress reports), etc. that will be developed pursuant to this Settlement Agreement and become incorporated into and enforceable under this Settlement Agreement constitute the final, complete and exclusive agreement and understanding among the Parties with respect to the settlement embodied in this Settlement Agreement. The Parties acknowledge that there are no representations, agreements or understandings relating to the settlement other than those expressly contained in this Settlement Agreement. The following appendices are attached to and incorporated into this Settlement Agreement:

"Appendix A" is the SOW.

"Appendix B" is the map of the Site.

XXVIII. ADMINISTRATIVE RECORD

106. EPA will determine the contents of the administrative record file for selection of the remedial action. Settling Party shall submit to EPA documents developed during the course of the RI/FS upon which selection of the response action may be based. Upon request of EPA, Settling Party shall provide copies of plans, task memoranda for further action, quality assurance memoranda and audits, raw data, field notes, laboratory analytical reports and other reports. Upon request of EPA, Settling Party shall additionally submit any previous studies conducted under state, local or other federal authorities relating to selection of the response action, and all communications between Settling Party and state, local or other federal authorities concerning selection of the response action. At EPA's discretion, Settling Party shall establish a community information repository at or near the Site, to house one copy of the administrative record.

XXIX. EFFECTIVE DATE AND SUBSEQUENT MODIFICATION

107. This Settlement Agreement shall be effective 5 days after the Settlement Agreement is signed by the Director of the Emergency and Remedial Response Division, EPA Region 2.

108. This Settlement Agreement may be amended by mutual agreement of EPA and Settling Party. Amendments shall be in writing and shall be effective when signed by EPA. EPA Project Coordinators do not have the authority to sign amendments to the Settlement Agreement.

109. No informal advice, guidance, suggestion, or comment by the EPA Project Coordinator or other EPA representatives regarding reports, plans, specifications, schedules, or any other writing submitted by Settling Party shall relieve Settling Party of its obligation to obtain any formal approval required by this Settlement Agreement, or to comply with all requirements of this Settlement Agreement, unless it is formally modified.

XXX. NOTICE OF COMPLETION OF WORK

110. When EPA determines that all Work has been fully performed in accordance with this Settlement Agreement, with the exception of any continuing obligations required by this Settlement Agreement, including but not limited to payment of Future Response Costs and record retention, EPA will provide written notice to Settling Party. If EPA determines that any such Work has not been completed in accordance with this Settlement Agreement, EPA will notify Settling Party, provide a list of the deficiencies, and require that Settling Party modify the RI/FS Work Plan if appropriate in order to correct such deficiencies, in accordance with Paragraph 39 (Modification of the RI/FS Work Plan). Failure by Settling Party to implement the approved modified RI/FS Work Plan shall be a violation of this Settlement Agreement.

Agreed this 27th day of July, 2005.

For Settling Party Dana Corporation

By: Stan A. Whitaker

Title: Managing Attorney

It is so ORDERED AND AGREED this 1st day of AUGUST, 2005.

BY: William McCabe DATE: 8-1-05
Name
Director, Emergency and Remedial Response Division
Region 2
U.S. Environmental Protection Agency
EFFECTIVE DATE: 8/6/2005

APPENDIX A
STATEMENT OF WORK

STATEMENT OF WORK FOR
GROUNDWATER REMEDIAL INVESTIGATION AND FEASIBILITY STUDY AT THE
CORNELL-DUBILIER ELECTRONICS SITE
SOUTH PLAINFIELD, NEW JERSEY

A. INTRODUCTION

1. The purpose of this remedial investigation/feasibility study (RI/FS) is to investigate the nature and extent of groundwater contamination at the Cornell-Dubilier Electronics Site ("the Site") and develop and evaluate potential remedial alternatives. The RI and FS are interactive and may be conducted concurrently so that the data collected in the RI influences the development of remedial alternatives in the FS, which in turn affects the data needs and the scope of treatability studies, if needed. To achieve the objective of the statement of work, the Triad work strategy will be used. Information regarding the Triad work strategy can be obtained at http://www.triadcentral.org.

2. The Settling Party will conduct this groundwater RI/FS and will produce a draft groundwater RI and FS report that are in accordance with this statement of work, the Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (U.S. EPA, Office of Emergency and Remedial Response, October 1988), and any other guidance that EPA uses in conducting a RI/FS, as well as any additional requirements in the Administrative Settlement Agreement and Order on Consent (the "Agreement"). The RI/FS Guidance describes the report format and the required report content. The Settling Party will furnish all necessary personnel, materials, and services needed, or incidental to, performing the groundwater RI/FS, except as otherwise specified in the Agreement.

3. At the completion of the groundwater RI/FS, EPA will be responsible for the selection of a site remedy and will document this selection in a Record of Decision (ROD). The remedial action alternative selected by EPA will meet the cleanup standards specified in CERCLA Section 121. That is, the selected remedial action will be protective of human health and the environment, will be in compliance with, or include a waiver of, applicable or relevant and appropriate requirements of other laws, will be cost-effective, will utilize permanent solutions and alternative treatment technologies or resource recovery technologies, to the maximum extent practicable, and will address the statutory preference for treatment as a principal element.

The final groundwater RI/FS report, as adopted by EPA, and the baseline risk assessment will, with the administrative record, form the basis for the selection of the site's remedy and will provide the information necessary to support the development of the ROD.

4. As specified in CERCLA Section 104(a)(1), as amended by SARA, EPA will provide oversight of the Settling Party's activities throughout the groundwater RI/FS. The Settling Party will support EPA's initiation and conduct of activities related to the implementation of oversight activities.

D. TASK I SCOPING

1. The RI/FS is conducted to gather sufficient data and information necessary to characterize the nature and extent of contamination in order to support the selection of a groundwater remedy that will reduce or eliminate risks to human health or the environment associated with groundwater contamination at the site.

2. The RI/FS achieves its objectives by determining the horizontal and vertical distribution and concentration of hazardous substances and its association with the site.

3. Within forty-five (45) days of the effective date of the Agreement, the Settling Party shall submit to EPA a preliminary conceptual site model (CSM) to support the development of the RI/FS Work Plan.

4. Before planning RI/FS activities, all existing site data will be thoroughly compiled and reviewed by the Settling Party. Specifically, this will include presently available data relating to the varieties and quantities of hazardous substances at the site, and past disposal practices. This information will be utilized in determining additional data needed to characterize the site, better define potential applicable or relevant and appropriate requirements (ARARs), and develop a range of preliminarily identified remedial alternatives. Data Quality Objectives (DQOs) will be established subject to EPA approval which specify the usefulness of existing data. Decisions on the necessary data and DQOs will be made by EPA.

5. The Settling Party will conduct a site visit during the scoping phase of the project to assist in developing a conceptual understanding of sources and areas of contamination as well as potential exposure pathways and receptors at the site. During the site visit the Settling Party should observe the site's

physiography, hydrology, geology, and demographics, as well as natural resource, ecological and cultural features. This information will be utilized to better scope the project and to determine the extent of additional groundwater data necessary to characterize the site, better define potential ARARs, and narrow the range of preliminarily identified remedial alternatives.

6. The Settling Party will prepare an inventory of water supply wells (public and private) that lie within a one half-mile radius of the Site. The locations of these wells shall subsequently be posted on appropriate groundwater contaminant isoconcentration maps prepared for the Site to illustrate the relationship of existing groundwater use to any Site-related groundwater contamination. The potential influence of water withdrawal from any of these wells on groundwater flow directions at the Site shall also be considered. The results of this well search shall also be evaluated to determine if any existing wells could be sampled, in lieu of the installation of new wells.

7. Once the Settling Party has collected and analyzed existing data and conducted a site visit, a preliminary CSM will be prepared for project planning purposes. Project planning activities include those tasks described below as well as identifying data needs, developing a work plan, designing a data collection program, and identifying health and safety protocols. The Settling Party will meet with EPA to review the preliminary CSM and to plan RI/FS activities before drafting the groundwater RI/FS Work Plan, sampling and analysis plan, and site health and safety plan. If EPA disapproves, or requires revisions to, the preliminary CSM, in whole or in part, the Settling Party shall amend and submit to EPA a revised preliminary CSM which is responsive to the directions in all EPA comments, within fourteen (14) days of receiving EPA's comments.

a. Groundwater RI/FS Work Plan and Schedule (2.3.1)

Within forty-five (45) days of EPA's authorization to proceed based on the preliminary CSM, the Settling Party shall submit to EPA a RI/FS Work Plan for the completion of the groundwater RI/FS. The RI/FS Work Plan should include, among other things, a detailed schedule for RI/FS activities at the Site. If EPA disapproves, or requires revisions to, the RI/FS Work Plan in whole or in part, the Settling Party shall amend and submit to EPA a revised Work Plan which is responsive to the directions in all EPA comments, within thirty (30) days of receiving EPA's comments. The RI/FS Work Plan shall include:

A. A Quality Assurance/Quality Control Project Plan (QAPP), which shall be prepared consistent with "EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations" (EPA QA/R-5, October 1998), and which shall include the following elements:

i. All sampling, analysis, data assessment, and monitoring shall be performed in accordance with the "Region II CERCLA Quality Assurance Manual," Revision 1, EPA Region 2, dated October 1989, and any updates thereto, or an alternate EPA-approved test method, and the guidelines set forth in the Agreement. All testing methods and procedures shall be fully documented and referenced to established methods or standards.

ii. The QAPP shall also specifically include the following items:

a. An explanation of the way(s) the sampling, analysis, testing, and monitoring will produce data for the RI/FS phase;

b. A detailed description of the sampling, analysis, and testing to be performed, including sampling methods, analytical and testing methods, sampling locations and frequency of sampling;

c. A map depicting sampling locations; and

d. A schedule for performance of specific tasks.

iii. In the event that additional sampling locations, testing, and analyses are utilized or required, the Settling Party shall submit to EPA an addendum to the QAPP for approval by EPA.

iv. The QAPP shall address the following elements:

Project Management

a. Title and Approval Sheet
b. Table of Contents and Document Control Format
c. Distribution List
d. Project/Task Organization and Schedule
e. Problem Definition/Background
f. Project/Task Description

g. Quality Objectives and Criteria for Measurement Data
h. Special Training Requirements and Certification
i. Documentation and Records

Measurement/Data Acquisition

j. Sampling Process Design
k. Sampling Methods Requirements
l. Sample Handling and Custody Requirements
m. Analytical Methods Requirements
n. Quality Control Requirements
o. Instrument/Equipment Testing, Inspection, and Maintenance Requirements
p. Instrument Calibration and Frequency
q. Inspection/Acceptance Requirements for Supplies and Consumables
r. Data Acquisition Requirements (Non-Direct Measurements)
s. Data Management

Assessment/Oversight

t. Assessments and Response Actions
u. Reports to Management

Data Validation and Usability

v. Data Review, Validation, and Verification Requirements
w. Validation and Verification Methods
x. Reconciliation with Data Quality Objectives

v. In order to provide quality assurance and maintain quality control with respect to all samples to be collected, the Settling Party shall ensure the following:

a. Quality assurance and chain-of-custody procedures shall be performed in accordance with standard EPA protocol and guidance, including the "Region II CERCLA Quality Assurance Manual," Revision 1, EPA Region 2, dated October 1989, and any updates thereto, and the guidelines set forth in the Agreement.

b. The laboratory to be used must be specified. If the laboratory participates in the Contract Laboratory Program (CLP) for the analysis to be performed for this investigation, then project specific Performance Evaluation (PE) samples will not be required, as CLP laboratories run EPA PEs on a quarterly basis. If the proposed laboratory does not participate in the CLP for the analyses required, PE samples must be analyzed to demonstrate the capability to conduct the required analysis prior to being approved for use. Once a non-CLP laboratory has been selected, the laboratory should submit a copy of their Laboratory Quality Assurance Program Plan (LQAPP) to EPA for review and approval.

For any analytical work performed, including that done in a fixed laboratory, in a mobile laboratory, or in on-site screening analyses, the Settling Party must submit to EPA a "Non-CLP Superfund Analytical Services Tracking System" form for each laboratory utilized during a sampling event, within thirty (30) days after acceptance of the analytical results. Upon completion, such documents shall be submitted to the EPA Project Coordinator, with a copy of the form and transmittal letter to:

Regional Sample Control Center Coordinator
U.S. EPA Region 2
Division of Environmental Science & Assessment
2890 Woodbridge Avenue, Bldg. 209, MS-215
Edison, NJ 08837

c. The laboratory utilized for analyses of samples must perform all analyses according to accepted EPA methods as documented in the "Contract Lab Program Statement of Work for Organic Analysis, (OLM04.2)" or the latest revision, and the "Contract Lab Program Statement of Work for Inorganic Analysis, (ILM04.0)" or the latest revision, or other EPA approved methods.

d. Unless indicated otherwise in the approved QAPP, upon receipt from the laboratory, all data shall be validated.

e. Submission of the validation package (checklist, report and Form Is containing the final data) to EPA, prepared in accordance with the provisions of Subparagraph g., below.

f. Assurance that all analytical data that are validated as required by the QAPP are validated according to the procedures stated in the "EPA Region II Contract Lab Program Organics Data Review and Preliminary Review (SOP #HW-6, Revision 11)," dated June 1996, or the latest revision, and the "Evaluation of Metals Data for the Contract Laboratory Program (SOP #HW-2, Revision 11)," dated January 1992 or the latest revision, or EPA-approved equivalent procedures. Region 2 Standard Operating Procedures are available at: *http://www.epa.gov/region02/smb/sops.htm*

g. Unless indicated otherwise in the QAPP, the Settling Party shall require deliverables equivalent to CLP data packages from the laboratory for analytical data. Upon the EPA's request, the Settling Party shall submit to the EPA the full documentation (including raw data) for this analytical data. EPA reserves the right to perform an independent data validation, data validation check, or qualification check on generated data.

h. The Settling Party shall insert a provision in its contract(s) with the laboratory utilized for analyses of samples, which will require granting access to EPA personnel and authorized representatives of the EPA for the purpose of ensuring the accuracy of laboratory results related to the Site.

B. A Field Sampling and Analysis Plan (FSP), which provides a detailed description of the sampling, analysis, and monitoring that shall be performed during the RI/FS phase, consistent with the Agreement.

i. The FSP shall provide, at a minium, for the collection of data sufficient to:

a. Delineate site-related contamination in the groundwater, taking into account information contained in the CSM regarding sources of contamination other than the Site, background concentrations of naturally occurring constituents, and potential exposure pathways;

b. Evaluate cross-media contaminant transport (e.g., groundwater to surface water or groundwater to soil vapor) as necessary to support the assessment of risks associated with potential or actual exposures to site-related contamination in groundwater under current and reasonably likely future conditions; and

c. Evaluate remedial alternatives to address site-related contamination in groundwater.

ii. The FSP shall include, at a minimum, the following elements:

a. The installation of additional shallow and deep bedrock monitoring wells to refine the known extent of groundwater contamination. This phase, identified as Phase II, shall include at a minimum, the installation of the following monitoring wells (see Figure 1 for general locations):

Upgradient Groundwater Quality
Two shallow bedrock monitoring wells southeast of the industrial park to characterize background water quality.
One deep bedrock monitoring well southeast of the industrial park to characterize background water quality.

Vertical Delineation
One deep bedrock monitoring well will be installed adjacent to monitoring well MW12 to characterize the vertical extent of contamination.

Sidegradient Delineation
One shallow bedrock monitoring well sidegradient (west-southwest) of the industrial park along Delmore Avenue.

One shallow bedrock monitoring well sidegradient (northeast) of the industrial park along Metuchen Road.

Downgradient Delineation
Three shallow bedrock monitoring wells downgradient (northwest) of the industrial park.

Two deep bedrock monitoring wells downgradient (northwest) of the industrial park.

b. One complete round of sampling shall be performed on all of the groundwater monitoring wells. The sampling parameters shall include TCL VOCs, PCBs, TAL Metals, and Cyanide. Non-RAS analysis shall include PCB congeners, dioxins/furans and several monitored natural attenuation/water quality parameters. The Non-RAS analysis shall also be performed on a subset of groundwater samples. The sampling parameters and selection of groundwater monitoring wells for subsequent round(s) of sampling may be reduced, subject to EPA's approval, after review of the initial sampling results.

c. An evaluation of the recharge/discharge relationship between the bedrock groundwater system and the Bound Brook.

d. Based on a review of the results of the sampling performed at the Phase II groundwater monitoring wells described above in (a) and (b) of this subsection, installation and sampling of additional groundwater monitoring wells may be necessary to determine the nature and extent of contamination.

e. At present, it is unknown whether a pumping test shall be conducted. However, should a pumping test be determined to be necessary by EPA, the Settling Party shall submit a work plan for EPA approval detailing the work to be conducted during the pumping test.

f. A Vapor Intrusion Study shall be implemented to evaluate the potential for vapor intrusion into indoor air at properties in the vicinity of the industrial park. The locations for the initial survey (defined as the Stage 1 survey areas) will be selected from the areas identified on Figure 1. Depending on the results of the Stage 1 study, additional properties and survey areas may require investigation. The vapor intrusion study shall be conducted consistent with EPA guidance documents (including those set forth as Exhibits A and B) to the extent determined to be applicable by EPA in its sole discretion.

C. A Health and Safety Plan (HSP), which shall conform to 29 CFR §1910.120, "OSHA Hazardous Waste Operations Standards,"

and the EPA guidance document, "Standard Operating Safety Guidelines" (OSWER, 1988).

C. TASK II - COMMUNITY RELATIONS

EPA has developed a site-specific community relations plan and will make revisions to this plan as necessary and in accordance with EPA guidance and the NCP. To the extent requested by EPA, the Settling Party shall provide information supporting EPA's community relations programs.

D. TASK III - SITE CHARACTERIZATION (RI/FS Guidance, Chapter 3)

1. As part of the groundwater RI, the Settling Party will perform the activities described in this task, including the preparation of a site characterization summary and RI report. The overall objective of site characterization is to describe areas of a site that may pose a threat to human health or the environment. This is accomplished by first determining a site's physiography, geology, and hydrology. Surface and subsurface pathways of migration will be defined. The Settling Party will identify the sources of contamination and define the nature, extent, and volume of the sources of contamination, including their physical and chemical constitutes as well as their concentrations at incremental locations to background in the affected media. The Settling Party will also investigate the extent of migration of this contamination, as well as its volume and any changes in its physical or chemical characteristics, to provide for a comprehensive understanding of the nature and extent of groundwater contamination at the Site. Using this information, contaminant fate and transport is then determined and projected.

2. During this phase of the groundwater RI/FS, the work plan, FSAP, QAPP, and health and safety plan are implemented. Field data are collected and analyzed to provide the information required to accomplish the objectives of the study. The Settling Party will notify EPA at least two weeks in advance of the field work regarding the planned dates for field activities, including ecological field surveys, field lay out of the sampling grid, excavation, installation of wells, initiating sampling, installation and calibration of equipment, pump tests, and initiation of analysis and other field investigation activities. The Settling Party will demonstrate that the laboratory and type of laboratory analyses that will be utilized during site characterization meets the specific QA/QC requirements and the DQOS of the Site investigation as specified in the QAPP. In view of the unknown site conditions, activities are often iterative,

and to satisfy the objectives of the RI/FS it may be necessary for the Settling Party to modify the work specified in the initial RI/FS Work Plan. In addition to the deliverables below, the Settling Party will provide a monthly progress report and participate in meetings at major points in the RI/FS.

a. Field Investigation (3.2)

The field investigation includes the gathering of data to define site physical characteristics, sources of contamination, and the nature and extent of contamination at the Site. These activities will be performed by the Settling Party in accordance with the RI/FS Work Plan. At a minimum, this shall address the following:

i. Implement and document field support activities (3.2.1)

The Settling Party will initiate field support activities following approval of the groundwater RI/FS work plan and QAPP. Field support activities may include scheduling, and procuring equipment, office space, laboratory services, and/or contractors. The Settling Party may initiate other time critical field support activities, such as obtaining access to the Site, prior to approval of the RI/FS work plan and QAPP. The Settling Party will provide EPA with reasonable notice prior to initiating field support activities so that EPA may adequately schedule oversight tasks. The Settling Party will also notify EPA in writing upon completion of field support activities.

ii. Investigate and define site physical characteristics (3.2.2)

The Settling Party will collect data on the physical characteristics of the Site and its surrounding areas including the physical physiography, geology, and hydrology, and specific physical characteristics identified in the work plan. This information will be ascertained through a combination of physical measurements, observations, and sampling efforts and will be utilized to define potential transport pathways and human and ecological receptor populations. In defining the site's physical characteristics the Settling Party will also obtain sufficient engineering data (such as aquifer characteristics) for the projection of contaminant fate and transport, and development and screening of remedial action alternatives, including information to assess treatment technologies.

iii. Define sources of contamination (3.2.3)

The Settling Party will locate each source of contamination as necessary to determine the nature and extent of contamination for the Site. For each location, the physical characteristics and chemical constituents and their concentrations will be determined for all known and discovered sources of contamination. The Settling Party shall conduct sufficient sampling to define the boundaries of the contaminant sources to the levels established in the FSP and/or QAPP to achieve the DQOs.

Defining the source of contamination will include analyzing the potential for contaminant release (e.g., long term leaching from soil), contaminant mobility and persistence, and characteristics important for evaluating remedial actions, including information to assess treatment technologies, and for off-site sources, assessing the impact of off-site contamination on potential remedial alternatives.

iv. Describe the nature and extent of contamination (3.2.4)

The Settling Party will gather information to describe the nature and extent of contamination as a final step during the field investigation. To describe the nature and extent of contamination, the Settling Party will utilize the information on site physical characteristics and sources of contamination to give a preliminary estimate of the contaminants that may have migrated. The Settling Party will then implement an iterative monitoring program and any study program identified in the groundwater RI/FS Work Plan such that by using analytical techniques sufficient to detect and quantify the concentration of contaminants, the migration of contaminants through the various media at Site can be determined. In addition, the Settling Party will gather data for calculations of contaminant fate and transport. This process is continued until the area and depth of contamination are known to the level of contamination established in the QAPP and DQOs. The Settling Party will use the information on the nature and extent of contamination to determine the level of risk presented by the Site. The Settling Party will use this information to help to determine aspects of the appropriate remedial action alternatives to be evaluated.

b. Data Analysis (3.4)

Evaluate site characteristics (3.4.1)

The Settling Party will analyze and evaluate the data to describe: (1) Site physical characteristics, (2) contaminant

source characteristics, (3) nature and extent of contamination and (4) contaminant fate and transport. Results of the Site physical characteristics, source characteristics, and extent of contamination analyses are utilized in the analysis of contaminant fate and transport. The evaluation will include the actual and potential magnitude of releases from the sources, and horizontal and vertical spread of contamination as well as mobility and persistence of contaminants. Where modeling is appropriate, such models shall be identified to EPA in a technical memorandum prior to their use. All data and programming, including any proprietary programs, shall be made available to EPA together with a sensitivity analysis. The groundwater RI data shall be presented in a format (i.e., WordPerfect version 9.0 or latest on computer disk(s)). The Settling Party shall agree to discuss and then collect any data gaps identified by the EPA that is needed to complete the baseline risk assessment. (See "Guidance for Data Useability in Risk Assessment - OSWER Directive # 9285.7- 05 - October 1990.) Also, this evaluation shall include any information relevant to Site characteristics necessary for evaluation of the need for remedial action in the baseline risk assessment and for the development and evaluation of remedial alternatives. (See Risk Evaluation of Remedial Alternatives (Part C) - OSWER Directive 9285.7-01C - December 1991.) Analysis of data collected for Site characterization will meet the DQOS developed in the QAPP (or revised during the RI).

c. Data Management Procedures (3.5)

The Settling Party will consistently document the quality and validity of field and laboratory data compiled during the groundwater RI.

i. Document field activities (3.5.1)

Information gathered during Site characterization will be consistently documented and adequately recorded by the Settling Party in well maintained field logs and laboratory reports. The method(s) of documentation must be specified in the RI/FS Work Plan. Field logs must be utilized to document observations, measurements, and significant events that have occurred during field activities. Laboratory reports must document sample custody, analytical responsibility, analytical results, adherence to prescribed protocols, nonconformity events, corrective measures, and/or data deficiencies.

ii. Maintain sample management and tracking (3.5.2; 3.5.3.)

The Settling Party will maintain field reports, sample shipment records analytical results, and QA/QC reports to ensure that only validated analytical data are reported and utilized in the evaluation of remedial alternatives. Analytical results developed under the work plan will not be included in any Site characterization reports unless accompanied by or cross-referenced to a corresponding QA/QC report. In addition, the Settling Party will establish a data security system to safeguard chain-of custody forms and other project records to prevent loss, damage, or alteration of project documentation.

d. Site Characterization Deliverables (3.6)

The Settling Party will prepare the preliminary Site characterization summary and the remedial investigation report.

Preliminary Site Characterization Summary(3.6.2)

After completing field sampling and analysis, the Settling Party will prepare a concise characterization summary. This summary will review the investigative activities that have taken place, and describe and display Site data documenting the location and characteristics of surface and subsurface feature and contamination at the Site including the affected medium, types, location types, physical state, concentration of contaminants and quantity. In addition, the location, dimensions, physical condition and varying concentrations of each contaminant throughout each source and the extent of contaminant migration through each of the affected media will be documented. The Site characterization summary will provide EPA with a preliminary reference for developing the risk assessment, and evaluating the development and screening of remedial alternatives and the refinement and identification of ARARs.

E. TASK IV - IDENTIFICATION OF CANDIDATE TECHNOLOGIES (4.2)

The Settling Party will identify in a technical memorandum, subject to EPA's review and approval, candidate technologies for a treatability studies program. The memorandum will be submitted after the last set of analytical results collected during the RI have been validated. The listing of candidate technologies will cover the range of technologies required for alternatives analysis (Task 8.2). The specific data requirements for the testing program will be determined and refined during Site characterization and the development and screening of remedial alternatives (Tasks 3 and 8, respectively).

F. TASK V - TREATABILITY STUDIES; AS NECESSARY

Treatability testing will be performed by the Settling Party, at EPA's request, to assist in the detailed analysis of alternatives. In addition, if applicable, testing results and operating conditions will be used in the detailed design of the selected remedial technology. The following activities will be performed by the Settling Party.

i. Conduct literature survey and determine the need for treatability testing (4.2.2)

The Settling Party will conduct a literature survey to gather information on performance, relative costs, applicability, removal efficiencies, operation and maintenance (O&M) requirements, and implementability of candidate technologies. If practical candidate technologies have not been sufficiently demonstrated, or cannot be adequately evaluated, or cannot be adequately evaluated for this Site on the basis of available information, treatability testing will be conducted. Where it is determined by EPA that treatability testing is required, and unless the Settling Party can demonstrate to EPA's satisfaction that they are not needed, the Settling Party will submit to EPA a Treatability Testing Statement of Work (TTSOW) outlining the steps and data necessary to evaluate and initiate the treatability testing program.

ii. Evaluate treatability studies (4.2.3)

Once a decision has been made to perform treatability studies, the Settling Party and EPA will decide on the type of treatability testing to use (e.g., bench versus pilot). Because of the time required to design, fabricate, and install pilot scale equipment as well as perform testing for various operating conditions, the decision to perform pilot testing should be made as early in the process as possible or minimize potential delays of the groundwater FS. To assure that a treatability testing program is completed on time, and with accurate results, the Settling Party will either submit a separate treatability testing work plan or an amendment to the original RI/FS Work Plan for EPA review and approval.

iii. Treatability Testing and Deliverables (4.3)

The deliverables that are required, in addition to the memorandum identifying candidate technologies, where treatability testing is conducted, include a work plan which shall include a

field sampling and analysis plan and may include a revised QAPP and HSP, and a final treatability evaluation report.

iv. Treatability testing work plan (4.3.2)

The Settling Party will prepare a treatability testing work plan or amendment to the original Site work plan for EPA review and approval describing the Site background, remedial technology(ies) to be tested, test objectives, experimental procedures, treatability conditions to be tested, measurements of performance, analytical methods, data management and analysis, health and safety, and residual waste management. The DQOs for treatability testing should be documented as well. If pilot-scale treatability testing is to be performed, the pilot-scale work plan will describe pilot plant installation and start-up, pilot plant operation and maintenance procedures, operating conditions to be tested, and will include a field sampling and analysis plan to determine pilot plant performance, and may include a QAPP and a detailed HSP (as discussed below). If testing is to be performed off-site, the Settling Party will address all necessary permitting requirements to the satisfaction of appropriate authorities.

v. Treatability study QAPP(4.3.3)

If the original RI/FS QAPP is not adequate for defining the activities to be performed during the treatability test, the Settling Party shall prepare a separate treatability study QAPP or amendment to the original QAPP for the Site for EPA review and approval. The Settling Party shall submit the revised QAPP to EPA within thirty (30) days of EPA's determination that a separate or revised QAPP is required. If EPA disapproves of or requires revisions to the revised QAPP, in whole or in part, within twenty-one (21) days of receiving EPA's comments the Settling Party shall amend and submit to EPA a revised treatability study QAPP that is responsive to the directions in all EPA comments,.

Task 1 of this Statement of Work provides additional information on the requirements of the QAPP.

vi. Treatability study health and safety plan (4.3.4)

If the original RI/FS HSP is not adequate for defining the activities to be performed during the treatability test, the Settling Party shall prepare a separate treatability study HSP or amendment to the original HSP for the Site for EPA review and comment. The Settling Party shall submit the treatability study

HSP to EPA within thirty (30) days of EPA's determination that a separate or revised HSP is required. If EPA recommends revisions to the treatability study HSP, within twenty-one (21) days of receiving EPA's comments the Settling Party shall amend and submit to EPA a revised treatability study HSP that is responsive to the directions in all EPA comments.

Task 1 of this statement of work provides additional information on the requirements of the HSP. EPA does not "approve" the treatability study HSP.

vii. Treatability study evaluation report (4.3.5)

Following completion of treatability testing, the Settling Party will analyze and interpret the testing results in a technical report to EPA. The report will evaluate each technology's effectiveness, implementability, cost and actual results as compared with predicted results as compared with predicted results. The report will also evaluate full scale application of the technology, including a sensitivity analysis identifying the key parameters affecting full-scale operation.

G. TASK VI - BASELINE RISK ASSESSMENT

The Settling Party will prepare a Baseline Human Health Risk Assessment (BHHRA) for the Site which shall be incorporated by the Settling Party into the RI. The Settling Party shall provide EPA with the following deliverables:

1. Baseline Human Health Risk Assessment.

A. Actual and potential cancer risks and non-cancer hazards to human health shall be identified and characterized in accordance with CERCLA, the NCP, and EPA guidances including, but not limited to, the RI/FS Guidance, "Land Use in the CERCLA Remedy Selection Process" (OSWER Directive No. 9355.7-04) and the definitions and provisions of "Risk Assessment Guidance for Superfund ("RAGS")," Volume 1, "Human Health Evaluation Manual," (December 1989) (EPA/540/1-89/002).

B. Representative groundwater contaminants and associated concentrations in for the BHHRA shall be determined utilizing all currently available media-specific analytical data generated during the RI/FS.

C. Memorandum on Exposure Scenarios and Assumptions. Within 45 days after approval of the groundwater RI/FS Work Plan, the Settling Party shall submit a memorandum describing the exposure scenarios and assumptions, taking into account for the BHHRA the present and reasonably anticipated future land use of the Site. The memorandum should include appropriate text describing the conceptual site model and exposure routes of concern for the Site, and include a completed RAGS Part D Table 1. This table shall describe the pathways that will evaluated in the BHHRA, the rationale for their selection, and a description of those pathways that will not be evaluated. In addition, the Memorandum shall include a completed RAGS Part D Table 4 describing the exposure pathway parameters with appropriate references to EPA's 1991 Standard Default Assumptions and updated guidance developed by EPA. If EPA disapproves of or requires revisions to the memorandum, in whole or in part, which disapproval or required revisions shall be provided in writing with reasons for the disapproval or directions for revisions to make the submittal approvable, the Settling Party shall amend and submit to EPA a revised memorandum which is responsive to the directions in all EPA comments, within 30 days of receiving EPA's comments.

D. Pathway Analysis Report (PAR). The Settling Party shall prepare and submit a PAR within forty-five (45) days after receipt of the last set of validated data. The PAR shall be developed in accordance with OSWER Directive 9285.7-01D-1 dated December 17, 1997 (or more recent version), entitled, "*Risk Assessment Guidelines for Superfund Part D*" and other appropriate guidance in Appendix 1A and updated thereto. The PAR shall contain all the information necessary for a reviewer to understand how the risks at the Site will be assessed. The PAR will build on the Memorandum on Exposure Scenarios and Assumptions (see C above) describing the risk assessment process and how the risk assessment will be prepared. The PAR shall include completed RAGS Part D Tables 2, 3, 5, and 6 as described below. The PAR must be reviewed and approved by EPA prior to the submission of the draft BHHRA.

i. Chemicals of Concern (COC). The PAR shall contain all the information necessary for a reviewer to understand how the risks at the Site will be evaluated.

a. Based on the results of the Site Characterization Summary Report the Settling Party shall list the hazardous substances present in the groundwater and the contaminants of potential concern ("COPCs") as described in the Risk Assessment Guidance for Superfund Part A.

b. Table 2-Selection of COCs. Representative contaminants and associated concentrations in sample media for the PAR shall be determined utilizing all currently available media-specific validated analytical data generated during the groundwater RI/FS. The selection of COCs shall follow Risk Assessment Guidance for Superfund (Part A) and before chemicals are deleted as COCs they shall be evaluated against the residential PRGs from Region IX. The COCs shall be presented in completed RAGS Part D Table 2 format.

ii. Table 3 - Media Specific Exposure Point Concentrations. Using the chemicals selected in Table 2, this Table shall summarize the Exposure Point Concentrations for all COCs for the various media. The calculation of the Exposure Point Concentration shall follow the 1992 Guidance Document on the calculation of the 95% Upper Confidence Limit (UCL) on the Mean. In those cases where the 95% UCL exceeds the maximum, the maximum concentration shall be used as the EPC.

iii. Tables 5 and 6 - Toxicological Information. This section of the PAR shall provide the toxicological data (e.g., Cancer Slope Factors, Reference Doses, Reference Concentrations, Weight of Evidence for Carcinogens, and adjusted dermal toxicological factors where appropriate) for the chemicals of concern. The toxicological data shall be presented in completed RAGS Part D Tables 5 and 6. The source of data in order of priority

are: EPA's Integrated Risk Information System (IRIS), Health Effects Assessment Summary Tables (HEAST)-1997 and contact with EPA's National Center for Environmental Assessment. To facilitate a timely completion of the PAR, the Settling Party shall submit a list of chemicals for which IRIS values are not available to EPA as soon as identified thus allowing EPA to facilitate obtaining this information from EPA's National Center for Environmental Assessment.

If EPA disapproves, or requires revisions to, the PAR, in whole or in part, the Settling Party shall amend and submit to EPA a revised PAR which is responsive to the directions in all of EPA's written comments within thirty (30) days of receipt of EPA's comments.

E. Baseline Human Health Risk Assessment of the RI Report. Within forty-five (45) days of EPA's approval of the PAR, the Settling Party shall submit to EPA a Draft BHHRA for inclusion in the RI. The submittal shall include completed RAGS Part D Tables 7 through 10 summarizing the calculated cancer risks and non-cancer hazards and appropriate text in the risk characterization with a discussion of uncertainties and critical assumptions (e.g., background concentrations and conditions). The Settling Party shall perform the BHHRA in accordance with the approach and parameters described in the approved Memorandum of Exposure Scenarios and Assumptions and the PAR describe above. Text and tables from these previously approved reports shall be included in the appropriate sections of the BHHRA.

If EPA disapproves or requires revisions to the section, in whole or in part, which disapproval or required revision shall be provided in writing with reasons for the disapproval or directions for revisions to make the submittal approvable, the Settling Party shall amend and submit to EPA a revised report which is responsive to the directions in all EPA comments, within 30 days of receiving EPA's comments. The approved BHHRA shall be incorporated into the RI report.

H. TASK VII - REMEDIAL INVESTIGATION REPORT

1. Draft Groundwater Remedial Investigation Report

In accordance with the schedule in the approved groundwater RI/FS Work Plan, the Settling Party shall submit a draft groundwater RI report that is consistent with the provisions set forth in the Settlement Agreement, including EPA guidance referenced therein.

2. Final Groundwater Remedial Investigation Report

Within 45 days of receiving EPA's comments on the Draft groundwater RI Report, the Settling Party shall amend and submit to EPA a final report which is responsive to the directions in all EPA comments.

I. TASK VIII -DEVELOPMENT AND SCREENING OF REMEDIAL ALTERNATIVES

The development and screening of remedial alternatives is performed to develop an appropriate range of waste management options that will be evaluated. This range of alternatives should include options in which treatment is used to reduce the toxicity, mobility, or volume of wastes, but varying in the types of treatment, the amount treated, and the manner in which long-term residuals or untreated wastes are managed; options involving containment with little or no treatment; options involving both treatment and containment; and a no-action alternative. The following activities will be performed as a function of the development and screening of remedial alternatives.

1. Development and Screening of Remedial Alternatives(5.2)

The Settling Party will begin to develop and evaluate a range of appropriate waste management options that a minimum ensure protection of human health and the environment, concurrent with the RI Site characterization task.

i. Develop general response action(5.2.2)

The Settling Party will develop general actions for each medium of interest defining containment, treatment, excavation, pumping, or other actions, including institutional controls, singly or in combination, to satisfy the remedial action objectives.

ii. Identify areas or volumes of media(5.2.3)

The Settling Party will identify areas or volumes of media to which general response actions may apply, taking into account requirements for protectiveness as identified in the remedial action objectives. The chemical and physical characterization of the Site will also be taken into account.

iii. Assemble and document alternatives(5.2.6)

The Settling Party will assemble selected representative technologies into alternatives for each affected medium or operable unit.

Together, all of the alternatives will represent a range of treatment and containment combinations that will address either the Site or the operable unit as a whole. As discussed below, a summary of the assembled alternatives and their related action-specific ARARS will be prepared by the Settling Party for inclusion in a Remedial Alternatives Screening Technical Memorandum.

iv. Refine alternatives (5.2.7)

The Settling Party will refine the remedial alternatives to identify contaminant volume addressed by the proposed process and sizing of critical unit operations as necessary. Sufficient information will be collected for an adequate comparison of alternatives. PRGs for each chemical in each medium will also be modified as necessary to incorporate any new risk assessment information presented in the baseline risk assessment report. Additionally, action-specific ARARs will be updated as the remedial alternatives are refined.

v. Conduct and document screening evaluation of each alternative(5.2.8)

The Settling Party may perform a final screening process based on short and long term aspects of effectiveness, implementability, and relative cost. Generally, this screening process is only necessary when there are many feasible alternatives available for detailed analysis. If necessary, the screening of alternatives will be conducted to assure that only the alternatives with the most favorable composite evaluation of all factors are retained for further analysis. As appropriate, the screening will preserve the range of treatment and containment alternatives that was initially developed. The range of remaining alternatives will include options that use treatment

technologies and permanent solutions to the maximum extent practicable, including institutional controls. The Settling Party will make a presentation to EPA and the State, identifying the remedial action objectives and summarizing the development and preliminary screening of remedial alternatives.

2. Alternatives Development and Screening Deliverables(5.3)

The Settling Party will prepare a Remedial Alternatives Screening (RAS) Technical Memorandum summarizing the work performed in and the results of each task above, including an alternatives array summary. The reasons for eliminating alternatives during the preliminary screening process must be specified. The RAS Technical Memorandum will also summarize the reasoning employed in screening, arraying alternatives that remain after screening, and identifying the action-specific ARARs for the alternatives that remain after screening. These will be modified by the Settling Party if required by EPA's comments to assure identification of a complete and appropriate range of viable alternatives to be considered in the detailed analysis. This deliverable will document the methods, rationale, and results of the alternatives screening process. Unless otherwise specified by EPA, EPA's comments on the RAS Technical Memorandum will be incorporated into the Settling Party's next submittal.

3. Detailed analysis of remedial alternatives

The detailed analysis will be conducted by the Settling Party to provide EPA with the information needed to allow for the selection of a Site remedy. This analysis is the final task to be performed by the Settling Party during the groundwater FS.

i. Detailed Analysis of Alternatives (6.2)

The Settling Party will conduct a detailed analysis of alternatives which will consist of an analysis of each option against a set of nine evaluation criteria and a comparative analysis of all options using the same evaluation criteria as a basis for comparison.

ii. Apply nine criteria and document analysis (6.2.1-6.2.4)

The Settling Party will apply nine evaluation criteria to the assembled remedial alternatives, including institutional controls, to ensure that the selected remedial alternative will be protective of human health and the environment; will be in compliance with, or include a waiver of, ARARS; will be cost-effective; will utilized permanent solutions and alternative

treatment technologies, or resource recovery technologies, to the maximum extent practicable; and will address the statutory preference for treatment as a principal element. The evaluation criteria include: (1) overall protection of human health and the environment; (2) compliance with ARARs; (3) long-term effectiveness and permanence; (4) reduction of toxicity, mobility, or volume; (5) short-term effectiveness; (6) implementability; (7) cost; (8) state (or support agency) acceptance; and (9) community acceptance.

(Note: criteria 8 and 9 are considered after the RI/FS report has been released to the general public.) For each alternative the Settling Party should provide: (1) a description of the alternative that outlines the waste management strategy involved and identifies the key ARARs associated which each alternative, and (2) a discussion of the individual criterion assessment. If the Settling Party does not have direct input on criteria (8) state (or support agency) acceptance and (9) community acceptance, these will be addressed by EPA.

iii. Compare alternatives against each other and document the comparison of alternatives (6.2.5; 6.2.6)

The Settling Party will perform a comparative analysis between the remedial alternatives. That is, each alternative will be compared against the others using the evaluation criteria as a basis of comparison. Identification and selection of the preferred alternative are reserved by EPA. The Settling Party will prepare a Remedial Alternatives Evaluation (RAE) Technical Memorandum summarizing the results of the comparative analysis. Unless otherwise specified by EPA, EPA's comments on the RAE Technical Memorandum will be incorporated into the Settling Party's next submittal.

iv. Detailed Analysis Deliverables(6.3)

Following receipt of EPA's comments on the RAE Technical Memorandum, unless directed by EPA to resubmit the RAE Technical Memorandum, the Settling Party will submit a draft groundwater FS report to EPA for review and approval (see Task IX). Once EPA's comments have been addressed by the Settling Party to EPA's satisfaction, the final groundwater FS report may be bound with the final groundwater RI report.

J. TASK IX - FEASIBILITY STUDY REPORT (6.4)

Within forty-five (45) days after EPA's approval of the RAE Technical Memorandum, the Settling Party shall submit to EPA a

draft groundwater Feasibility Study (FS) Report consisting of a detailed analysis of alternatives and a cost-effectiveness analysis, in accordance with the National Contingency Plan (NCP), 40 CFR Part 300, as well as the most recent guidance which reflects the findings in the approved Baseline Risk Assessment. The Settling Party shall refer to the groundwater RI/FS Work Plan and the RI/FS Guidance and the SOW for report content and format. Within fourteen (14) days of submitting the draft FS report, the Settling Party shall make a presentation to EPA and the State at which the Settling Party shall summarize the findings of the draft groundwater FS report and discuss EPA's and the State's preliminary comments and concerns associated with the draft groundwater FS report. If EPA disapproves of or requires revisions to the draft groundwater FS report, in whole or in part, the Settling Party shall amend and submit to EPA a revised draft FS report which is responsive to the directions in EPA's comments, within forty-five (45) days of receiving EPA's written comments.

The groundwater FS report shall contain the following:

- Summarize Feasibility Study objectives
- Summarize remedial objectives
- Articulate general response actions
- Identification and screening of remedial technologies
- Remedial alternatives description
- Detailed analysis of remedial alternatives
- Summary and conclusions

The Settling Party's technical feasibility considerations shall include the careful study of any problems that may prevent a remedial alternative from mitigating Site problems. Therefore, the Site characteristics from the RI must be kept in mind as the technical feasibility of the alternative is studied. Specific items to be addressed are reliability (operation over time), safety, operation and maintenance, ease with which the alternative can be implemented, and time needed for implementation.

REFERENCES FOR CITATION

The following list, although not comprehensive, comprises many of the regulations and guidance documents that apply to the RI/FS process:

The (revised) National Contingency Plan

"Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA," U.S. EPA, Office of Emergency and Remedial Response, October 1988, OSWER Directive No. 9355.3-01

"Interim Guidance on Potentially Responsible Party Participation in Remedial Investigation and Feasibility Studies," U.S. EPA, Office of Waste Programs Enforcement, Appendix A to OSWER Directive No. 9355.3-01.

"Guidance on Oversight of Potentially Responsible Party Remedial Investigations and Feasibility Studies," U.S. EPA, Office of Waste Programs Enforcement, OSWER Directive No. 9835.3

"A Compendium of Superfund Field Operations Methods," Two Volumes, U.S. EPA,. Office of Emergency and Remedial Response, EPA/540/P-87/001a, August 1987, OSWER Directive No. 9355.0-14.

"EPA NEIC Policies and Procedures Manual," May 1978, revised November 1984, EPA-330/9-78-001-R.

"Data Quality Objectives for Remedial Response Activities, " U.S. EPA, Office of Emergency and Remedial Response and Office of Waste Programs Enforcement, EPA/540/G-87/003, March 1987, OSWER Directive No. 9335.0-7B.

"Guidelines and Specifications for Preparing Quality Assurance Project Plans," U.S. EPA, Office of Research and Development, Cincinnati, OH, QAMS-004/80, December 29,1980.

"Interim Guidelines and Specifications for Quality Assurance Project Plans," U.S. EPA, Office of Emergency and Remedial Response, QAMS-005/80, December 1980.

"Users Guide to the EPA Contract Laboratory," U.S. EPA, Sample Management Office, August 1982.

"Interim Guidance with Applicable or Relevant and Appropriate Requirements,' U.S. EPA, Office of Emergency and Remedial Response, July 9, 1987, OSWER Directive No. 9234.0-05.

"CERCLA Compliance with Other Laws Manual," Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, August 1988 (draft), OSWER Directive No. 9234.1-01 and -02.

"Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites," U.S." U.S. EPA, Office of Emergency and Remedial Response, (draft), OSWER Directive No. 9283.1-2.

"A Guide to Preparing Superfund Proposed Plans, Records of Decision and other Superfund Decision Documents," U.S. EPA, Office of Emergency and Remedial Response, July 1999, OSWER Directive No. 200.1-23P.

"Risk Assessment Guidance for Superfund - Volume I Human Health Evaluation Manual" (Part A), EPA/540/1-89/002

"Risk Assessment Guidance for Superfund - Volume I Human Health Evaluation Manual" (Part B), EPA/540/R-92/003

"Risk Assessment Guidance for Superfund - Volume I Human Health Evaluation Manual (Part D, Standardized Planning, Reporting and Review of Superfund Risk Assessments), December 2001.

"Risk Assessment Guidance for Superfund - Volume II Environmental Evaluation Manual," March 1989, EPA/540/1-89/ 001

"Guidance for Data Useability in Risk Assessment," October, 1990, EPA/540/G-90/008

"Performance of Risk Assessments in Remedial Investigation/Feasibility Studies (RI/FSs) Conducted by Potentially Responsible Parties (PRPs)," August 28, 1990, OSWER Directive No.9835.15.

"Risk Evaluation of Remedial Alternatives" (Part C), December 1991, OSWER Directive 9285.7-01C.

"Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions," April 22, 1991, OSWER Directive No. 9355.0-30.

"Supplemental Guidance to RAGS: Calculating the Concentration Term," May 1992, OSWER Directive 9285.7-081.

"Health and Safety Requirements of Employed in Field Activities," U.S. EPA, Office of Emergency and Remedial Response, July 12, 1981, EPA Order No. 1440.2.

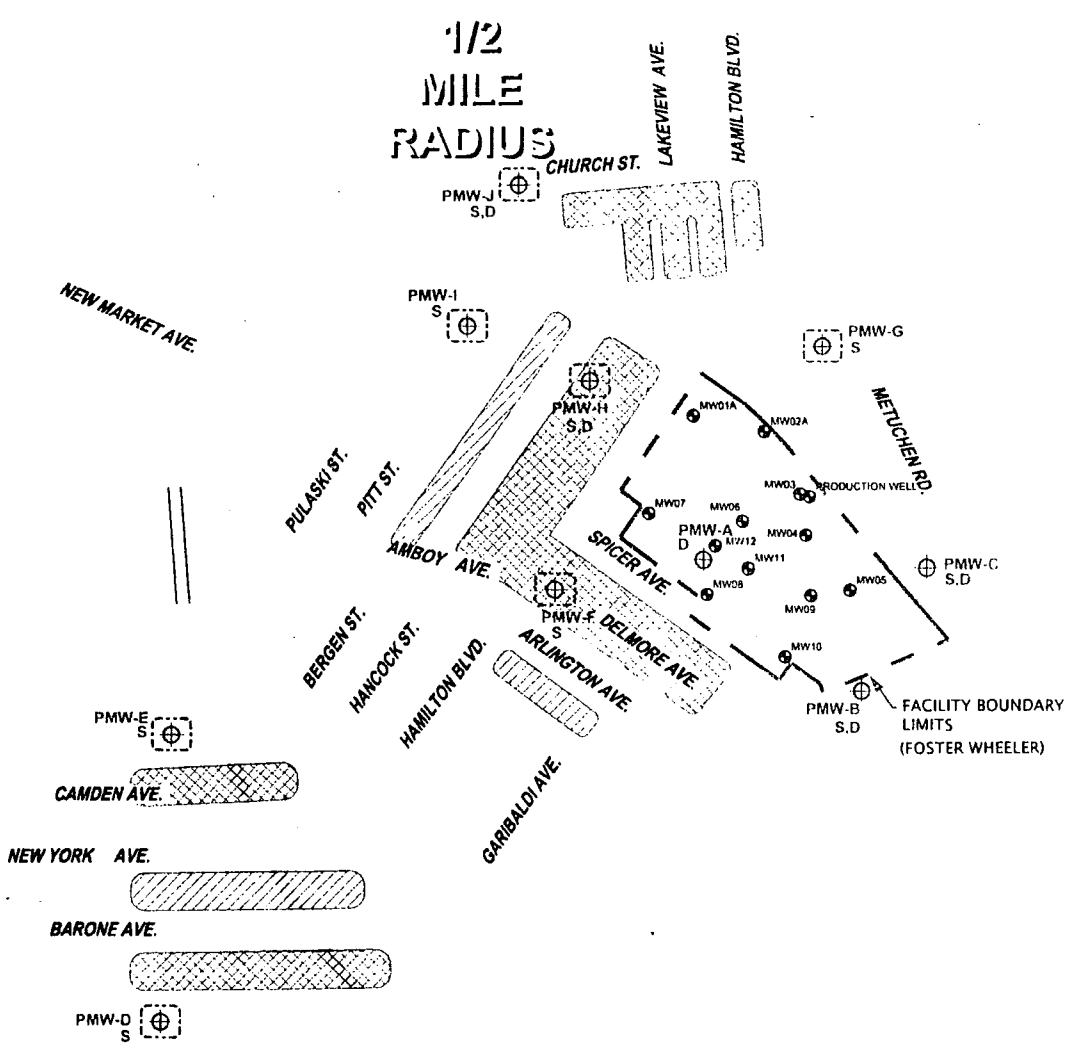
OSHA Regulations in 29 CFR 1910.120 (Federal Register 45654, December 19, 1986).

"Interim Guidance on Administrative Records for Selection of CERCLA Response Actions," U.S. EPA, Office of Waste Programs Enforcement, March 1, 1989, OSWER Directive No. 9833.3A.

"Community Relations in Superfund: A Handbook," U.S. EPA, Office of Emergency and Remedial Response, June 1988, OSWER Directive No. 9230.0#3B.

"Community Relations During Enforcement Activities And Development of the Administrative Record," U.S. EPA, Office of Programs Enforcement, November 1988, OSWER Directive No. 9836.0-1a.

USEPA. November 2002. Draft Guidance For Evaluating the Vapor Intrusion to Indoor Air Pathway From Groundwater and Soils (Subsurface Vapor Intrusion Guidance). Office of Solid Waste and Emergency Response. Washington, D.C.



PROPOSED MONITORING WELL AND SOIL GAS SURVEY LOCATIONS

OPERABLE UNIT 3 - REMEDIAL INVESTIGATION

CORNELL-DUBILIER ELECTRONICS, INC. SUPERFUND SITE

SOUTH PLAINFIELD, NEW JERSEY

FIGURE 1

DRAFTED BY: TSP\ TSP | DATE: 4/5/05

12285A0D3B

Exhibit A

Work Plan for Indoor Air Sampling

XX/XX/XX

I. Purpose

The purpose of this work plan is to describe the indoor air sampling that is to take place in the residences/buildings adjacent and near to the (Site Name) site.

II. Background

The (Site Name) site is located at (Address). *(Briefly list the chemicals used at the facility and how they were used, stored, etc. Provide a discussion on past releases and the extent of soil and groundwater contamination. Also, if any prior indoor air and/or soil vapor sampling has occurred, summarize the findings.)*

III. Project Description

The overall objective of this project is to determine whether or not volatile organic compounds (VOCs) from contaminated groundwater and/or soils are impacting indoor air in homes/buildings located above the contamination. In order to meet the project's objective, the following sub-objectives need to be met. First, this project will assess the current status of and potential for residential/occupational indoor air exposure. This will require quantifying the levels of VOCs in indoor air and crawlspace or subslab air (if any) and comparing them to chronic health-based levels of concern (See below and section VII). This project will also identify the indoor and outdoor sources that contribute to VOCs in indoor air. This will include, but is not limited to identifying household/commercial/industrial products containing VOCs, quantifying outdoor background levels of VOCs, and quantifying the levels of VOCs in crawlspace/subslab (if any) air.

The VOCs that will be investigated are listed in Table 1 below. These VOCs are being investigated because they are site-related chemicals of concern (i.e. they were used at the facility or are breakdown products of compounds used at the facility) and/or were identified as chemicals of potential concern (COPC) in the Baseline Risk Assessment Report dated month/year.

The levels of VOCs detected will be screened against levels of concern (See Section VII). The levels of concern for this project are in Table 1. The values are from EPA's Integrated Risk Information System (IRIS), National Center for Environmental Assessment (NCEA), and/or EPA Region 9 preliminary remediation goals (PRGs). Levels of concern for carcinogens represent a 10^{-6} (one in one million) to 10^{-4}(one in ten thousand) excess individual lifetime cancer risk. Non-cancer levels of concern represent a hazard quotient of 0.1. *(Consult with your regional toxicologist/risk assessor regarding the appropriate values)*

Table 1 - Levels of Concern

Compound	Cancer Risk Levels (in ug/m^3)				Non-Cancer Risk Levels (in ug/m^3)	
	10^{-6}	10^{-5}	10^{-4}	Source	HQ = 0.1	Source

NCEA: National Center for Environmental Assessment
IRIS: Integrated Risk Information System R9: EPA Region 9

IV. Sampling Rationale

A total of # homes/buildings will be sampled. The addresses of the houses/buildings to be sampled are listed in Table 2. See Figure 1 for their locations. These homes/buildings are all being sampled due to their proximity to the highest concentrations of VOCs in groundwater and/or soil. Other criteria include data gaps in prior sampling events, the presence of a basement, leaky basement, poor foundation condition, depth to groundwater, etc.

Air samples will be collected from the inside of each home/building, which will be representative of conditions related to potential chronic levels of environmental exposure in the respective homes buildings. In order to meet this objective, multiple sampling sites (at least 2) will be located throughout the home/building to offer representative coverage about the perimeter of the living/working quarters and its indoor air. These areas include the basement, if the home/building has one, and in a commonly occupied part of the living/working areas of each dwelling/building, such as a living room/office. In addition, a chronic exposure scenario indicates that air sampling should be performed for a 24-hour period.

(If crawlspace/subslab samples will be collected add the following)

Air samples will also be collected from the crawlspace/subslab beneath each home/building that has one. If the VOCs are volatilizing and migrating from the groundwater into indoor air, then they must pass through the crawlspaces/subslab space of the homes/buildings. Therefore, it is important to collect these samples to make this determination. These samples will be collected so that they are representative of conditions directly beneath the homes/buildings. This may require multiples sampling sites being located in the crawlspace/subslab space. In addition, samples will be collected over (contact DESA/Vapor Intrusion Work Group for the latest guidance on appropriate sampling time interval for subslab)

(If crawlspace samples will be collected add the following)

One week prior to sampling, crawlspace vents and openings will be sealed up with polyethylene sheets and secured with adhesive tape. The crawlspace vents and openings will

remain sealed during sampling. Covering up the vents and openings will prevent or minimize air exchange between the crawl space and outdoors which will prevent outdoor air interference. The main source of VOCs in crawlspace air should then be from the volatilization and subsequent migration of VOCs from contaminated groundwater into the crawl space.

In addition to sampling indoor air and crawlspace/subslab air, # samples will be collected from outdoor air to establish ambient outdoor air concentrations of the VOCs. These samples will be used to assess the ambient outdoor air concentrations of VOCs that could impact indoor air. Outdoor samples will be collected over the same 24-hour period as the indoor air samples are collected. (Recommend collecting outdoor air samples every day that indoor air samples are collected)

Table -2 - Homes/Buildings to be Sampled(subject to change)

Address	Crawl Space or Basement

V. Sampling Procedures

Whole air samples are to be collected in evacuated SUMMA canisters, and analyzed in accordance with U.S. EPA. January 1999, Compendium Method *TO-15: Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specialty-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)* from the *Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air.* See the Quality Assurance Project Plan for Sampling and Analysis of Indoor Air, dated month/year, for complete sampling procedures. The analytical method to be used is TO-15 using the Selective Ion Mode (SIM), if necessary. This method should obtain the detection limits needed to compare concentrations detected in air to levels of concern identified in Table 1.

VI. Instructions to Residents and Other Data Needs

Prior to sampling, residents/occupants/workers of the homes/buildings to be sampled will be given a set of instructions and survey (Attachments 1 and 2) to follow starting at least 48 hours prior to and during the sampling event. During sampling the residents/occupants/workers and officials from EPA will fill out a building survey that establishes an inventory of products, such as cleaners, solvents, etc., that were present in their homes/buildings at the time of sampling. If permitted, a preliminary walk-around inspection will also be performed to identify any potential indoor sources of VOCs. Products that contain VOCs include, but are not limited to:

- Paints and paint thinners,
- Cleaning products,
- Hobby supplies,
- Glues and furniture compounds,
- Dry cleaned clothes,
- Insecticides/Pesticides
- Office supplies
- pressed wood furniture
- new carpet

VII. Data Evaluation and Interpretation

When all data has been collected, levels of VOCs in indoor air and crawlspace subslab air will be compared to the Levels of Concern provided in Table 1. This will provide information on the current and potential health risks to residents. (If crawlspace/subslab samples collected, add the following) *Indoor air results from each home/building will also be compared to their respective crawlspace/subslab samples to determine if groundwater and or soil-derived VOCs are actually contributing to indoor air levels of VOCs.* Since there are many potential sources of VOCs other than the groundwater soil contamination, a comprehensive review of the outdoor background air data, indoor background air data, and information from the building surveys and inspection reports will be conducted. This will provide quantitative and qualitative information on these sources' contribution of VOCs to indoor air.

VIII. Points to Consider

Below is a list of items and resources that will be considered during the evaluation of data not already mentioned.

- National-Scale Air Toxics Assessment (EPA, 1996) which provides a baseline for "ambient" conditions in a given geographic area.
- Locations of industrial and commercial sources of VOCs near the homes/buildings (i.e. dry cleaners).
- Groundwater elevations.
- ATSDR Minimum Risk Levels for Hazardous Substances.
- Add other site specific information that may need to be considered.

(If requested add the following section)

IV. Reporting

After all the data has been compiled and evaluated, a report will be prepared by (Name) personnel and submitted to the project manager. The report will include air sampling data and information from the building surveys and inspection reports. The report will also provide a discussion on the findings, conclusions, and recommendations made during the data evaluation and interpretation phase of this project.

REFERENCES

1. USEPA. November 2002. Draft Guidance For Evaluating the Vapor Intrusion to Indoor Air Pathway From Groundwater and Soils (Subsurface Vapor Intrusion Guidance). Office of Solid Waste and Emergency Response. Washington, D.C.

2. Massachusetts Department of Environmental Protection. August, 2001. Revised Draft Indoor Air Sampling and Evaluation Guide. Office of Research and Standards.

3. USEPA, August 2003. Draft Work Plan for Indoor Air Sampling, Region VII

Exhibit B

GENERIC

QUALITY ASSURANCE PROJECT PLAN (QAPP)

FOR

INDOOR AIR SAMPLING

Project Officer's Signature: _____ Date: _____

Project Officer's Name:

Project Quality Assurance Officer's Signature: _____ Date: _____

Project Quality Assurance Officer's Name:

Date Prepared:

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LIST OF APPENDICES

Appendix A - Site Maps

Appendix B - U.S. Environmental Protection Agency (EPA). January 1999. Compendium Method *TO-15: Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specialty-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)* from the *Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air.* Second Edition.(http://www.epa.gov/ttn/amtic/files/ambient/airtox/to-15r.pdf) Center for Environmental Research Information. Office of Research and Development. Cincinnati, OH

Appendix C - U.S. EPA. July 1995. *Environmental Response Team (ERT) Standard Operating Procedure (SOP) #1704: SUMMA Canister Sampling.*

Appendix D- Example *Questionnaire*, Example *Canister Field Data Sheet* and Example *Chain of Custody* record

Appendix E - *Resident Instructions*, Example *Access Agreement*

1.0 Project Description

1.1 Problem Definition/Background

1.1 The purpose of this Quality Assurance Project Plan (QAPP) is to describe the procedures to be used for the environmental sampling which is to take place in residences/buildings adjacent to the *Site Name* site located in *City, State.*

The site is located at *(Address). (Briefly list the chemicals used at the facility and how they were used, stored, etc. Provide a discussion on past releases and the extent of soil and groundwater contamination. Also, if any prior indoor air and/or soil vapor sampling has occurred, summarize the findings.)*

Based upon the extent of the plume, shallow depth to groundwater, and the concentrations of chemicals in the groundwater, EPA has determined that *(additional)* indoor air monitoring is needed to determine if VOCs in the groundwater and/or soil are impacting indoor air above acceptable health-based levels. This includes sampling air within the residences/buildings, in the crawl spaces and/or soil vapor underneath the homes. Analytical work will be performed by *(name of analytic lab)*

1.2 Project/Task Description:

The objective of this study is to assess the current status of and potential for residential/occupational indoor air exposure to VOCs in homes/buildings adjacent to the *Site Name* site by comparing sample results to health based levels of concern. The levels of concern for this project are in Table 1 below. The values are from EPA's Integrated Risk Information System(IRIS), National Center for Environmental Assessment (NCEA), and/or EPA Region 9 preliminary remediation goals (PRGs). Levels of concern for carcinogens represent a 10-6 (one in one million) to 10-4(one in ten thousand) excess individual lifetime cancer risk. Non-cancer levels of concern represent a hazard quotient of 0.1. *(Consult your regional toxicologist/risk assessor regarding the appropriate values)*

Table 1 - Levels of Concern

Compound	Cancer Risk Levels (in ug/m3)				Non-Cancer Risk Levels (in ug/m^3)		Reporting Limit	Method Detection Limit
	10^{-6}	10^{-5}	10^{-4}	Source	HQ = 0.1	Source		

The data from this study will be assembled and provided to *(Name of RPM/OSC), Division*, U.S. EPA Region 2. Data will be assembled by the designated laboratory.

The activity schedule is as follows:

ACTIVITY	DATE
Date of the request which initiates the project.	
Review and Background information	
Date by which the project plan will be submitted to all interested parties.	
Obtain site access	
Date by which comments on the plan are to be received by the project officer.	
Date(s) of the field reconnaissance.	
Date(s) of the field sampling activities.	
Date(s) the samples will be submitted to the laboratory for analysis.	All samples will be shipped within 24 hours of collection.
Date(s) by which all analyses are to be completed and the data submitted to the project officer.	
Date of the completion of the draft interim/final project report. (Sampling Trip Report)	
Date by which the reviewer's comments on the report(s) must be received.	
Date for the issuance of the final project report.	

The primary use of the data collected will be to determine the extent of air contamination and evaluate potential health risks. The samples results will be evaluated to determine whether the contamination is significant enough to require further action (e.g., additional sampling, removal/remedial action).

2.0 Project Organization and Responsibility

2.1 Project/Task Organization

The following is a list of key personnel and their corresponding responsibilities. Due to the work breakdown structure of the project, an organization list is provided instead of a concise organization chart. *Modify Table below as appropriate for project*

PROJECT PERSONNEL	RESPONSIBILITY
Project Officer	Project Management/ Sampling Operations/ Field Support
Environmental Scientist	Sampling Operations/ Field Support
Project Quality Assurance Officer	Report QA
Laboratory	Laboratory Analysis, Laboratory QC, Data Processing Activities, Data Quality Review
Not Applicable	Performance Auditing
Not Applicable	Systems Auditing
DESA/Hazardous Waste Support Branch	Overall QA
Remedial Project Manager/On Scene Coordinator ERRD/*Branch/Section*	Overall Project Coordination

2.2 Documentation and Records

The data collected for the sampling activities will be organized, analyzed, and summarized in a final project report that will be submitted to the RPM/OSC according to the Project Schedule. The report will be prepared by the project officer and include appropriate data quality assessment. Standard methods and references will be used as guidelines for data reduction and reporting. All SOP data generated by the laboratory will be reported in standard deliverable format.

3.0 QA Objectives for Measurement Data (PARCC)

3.1 Quality Objectives and Criteria for Measurement Data

To assess data quality, PARCC (Precision, Accuracy, Representativeness, Completeness, and Comparability) parameters will be utilized. This is an integral part of the overall monitoring network design. Precision and accuracy are expressed in purely quantitative terms. The other parameters are only expressed using a mixture of quantitative and qualitative terms. All of these parameters are interrelated in terms of overall data quality and they may be difficult to evaluate separately due to these interrelationships. The relative significance of each of the parameters depends on the type and intended use of the data being collected. Therefore, these essential data quality elements are delineated as follows.

3.1.1 Analytical and sample collection precision

The measure of replicate precision is the absolute value of the difference between replicate measurements of the sample divided by the average value and expressed as a percentage as follows:

$$\text{Percent difference} = \frac{|X_1 - X_2|}{X} \times 100$$

where: X_1 - First measurement value
X_2 - Second Measurement value
X - Average of the two values

Factors that affected the precision of the measurement are: molecular weight, water solubility, polarizability, etc. A primary influence is the concentration level of the compound. A replicate precision value of 25 percent can be achieved for each of the target compounds. For more information, refer to Compendium Method *TO-15: Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specialty-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)* which can be found as Appendix B.

3.1.2 Analytical and sample collection accuracy

A measurement of analytical accuracy is the degree of agreement with audit standards. It is defined as the difference between the nominal concentration of the audit compound and the measured value divided by the audit value and expressed as a percentage as follows:

$$\text{Audit Accuracy, \%} = \frac{\text{Spiked Value - Observed Value}}{\text{Spiked Value}} \times 100$$

For more information, refer to Compendium Method *TO-15: Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specialty-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)* which can be found as Appendix B. As per Method TO-15, the performance criteria for audit accuracy should be within 30 percent for concentrations normally expected within contaminated ambient air.

3.1.3 Data representativeness

As previously discussed, data representativeness will be assessed by collecting field co-located samples. The field co-located samples are by definition equally representative of a given point and space and time. The laboratory also collects two samples from one canister; the sample and a duplicate. Representativeness is a qualitative parameter which is dependent upon the proper design of the sampling program and proper laboratory protocol. Therefore, data representativeness will be satisfied by ensuring that:

The sampling program is followed according to:

U.S. EPA (Environmental Protection Agency). October 1989. *Region II CERCLA Quality Assurance Manual.* Final Copy, Revision 1. Division of Environmental Services and Assessment, Edison, NJ.; and

U.S. EPA. December 1995. *Superfund Program Representative Sampling Guidance.* OSWER Directive 9360.4-10. Interim Final. EPA/540/R-95/141. Office of Emergency and Remedial Response (OERR). Washington, D.C.

Proper sampling techniques are used in accordance with:

U.S. EPA. *Environmental Response Team (ERT) Standard Operating Procedure (SOP) #1704: Summa Canister Sampling;* revised July 1995. The SOP is enclosed in Appendix C.

Proper analytical procedures are followed and holding times of the samples are not exceeded in the laboratory according to:

U.S. EPA. January 1999. Compendium Method *TO-15: Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specialty-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)* from the *Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air.* Second Edition. Center for Environmental Research Information. Office of Research and Development. Cincinnati, OH which can be found as Appendix B.

3.1.4 Data completeness

Data completeness will be expressed as the percentage of valid data obtained from measurement system. For data to be considered valid, it must meet all the acceptable criteria including accuracy and precision, as well as any other criteria specified by the analytical method used. Therefore, all data points critical to the sampling program in terms of completeness will be 100% validated by *(insert name of validation contractor or lab, as appropriate).* With 100% validation, the rationale for considering data points non-critical is not required.

3.1.5 Data comparability

To ensure data comparability, sampling and analysis for all samples will be performed using standardized analytical methods and adherence to the quality control procedures outlined in the methods and this QAPP. Therefore, the data will be comparable.

4.0 Sampling Procedures

4.1 Pre-Sampling Investigation

A qualitative assessment of the factors influencing indoor air contamination will be evaluated by conducting a simple "walk through" assessment prior to sampling. During this assessment

observations about potential indoor sources of the particular compounds noted in Table 1 should be made. Any other influencing factors will be noted and logged. A *Questionnaire* (see Appendix D) will be completed with the assistance of the occupant.

4.2 Sampling Process Design

Whole air samples are to be collected in evacuated SUMMA canisters, and analyzed in accordance with U.S. EPA. January 1999, Compendium Method *TO-15: Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specialty-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)* from the *Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air.*

The sampling objectives of this study are as follows. The first objective is to collect indoor air samples which will be representative of conditions related to potential chronic levels of environmental exposure in the respective structures. Sampling for chronic exposures to indoor air indicates that multiple sampling sites be used. In addition, a chronic exposure scenario indicates that air sampling should be performed for a twenty-four hour period.

For the purposes of this sampling event, sample locations were determined by selecting locations in the area of suspected ground water contamination. Each location to be sampled will be chosen by the RPM/OSC prior to sampling. The owner/occupant will be notified prior to the sampling day by a telephone call and an instruction page through the mail. A copy of this page can be found as Appendix E. The owner/occupant will also be required to sign an access agreement, allowing the field personnel to enter the building and to sample the indoor air. An example of this can be found as Appendix E. A map of the area can be found in Appendix A. A detailed description of sample collection methodology is presented in Section 4, Sub-section 2, Part 2: Sample Collection Methodology.

At least two (or more depending on the size of the building) sample locations shall be located in each of the (number of buildings) houses/buildings so as to offer representative coverage. Proposed siting includes the basement, if the home/building has one, and in a commonly occupied part of the living/working area of each home/building, such as the living room/bedroom/office. *This section should clearly explain how/why the selected sampling design and number of samples address/ensures representativeness)*

(If the building has a sump pump add the following)

For buildings that contain sump pumps, a sample will be taken in or as close as possible to the sump pump. This sample will be used to determine if the sump pump is serving as a route of entry for contaminants into the indoor environment.

(*If crawlspaces or subslab samples will be taken add the following*)

The second objective is to collect crawl space air/subslab samples which will be representative of conditions directly underneath the homes. Crawlspace air/subslab air, unlike indoor air will

not be affected by indoor sources (i.e., cleaners, solvents) of VOCs. In theory, it should provide information on the actual amount of VOCs migrating from the contaminated groundwater to the surface immediately below the homes. While these crawlspace/subslab samples will not provide information on the actual amount of VOCs in the indoor air, they will provide information on the potential impact to indoor air from subsurface contamination. This will require the collection of samples below the home and that samples be collected over *(consult with DESA/Vapor intrusion work group for the latest guidance on appropriate sampling time interval for subslab).* A total of x samples(x indoor and x crawl space/subslab) will be collected from each home/building.

(If the building has a crawlspace add the following)

In order to prevent outdoor air interference, crawl space vents will be closed prior to and during sampling. Each vent will be covered with a high density polyethylene barrier sheet. The sheet will be sealed on the outside of the vent with a tape adhesive.

(If a subslab sample requires drilling a hole through the foundation floor add a discussion on the procedures of installation and sampling. Note: DESA/Vapor Intrusion Work Group should be consulted for the latest guidance on sub-slab sampling. At minimum, this section should indicate that sampling depth is generally 2 feet below the slab, the hole should be in the center of the basement, away from the walls, should be sealed around the sampling equipment, and the hole should be closed after sampling unless a port is installed)

Along with the collection of indoor air and crawlspace/subslab samples, (# of samples) outdoor air samples will be collected within the area adjacent to the (facility). These samples will be used to assess the ambient outdoor air concentrations of VOCs that could impact indoor air. Outdoor samples will be collected over the same 24-hour period as the indoor air samples are collected. (Recommend collecting outdoor air samples everyday indoor air samples are collected). In addition, co-located samples will be collected by placing two canisters side by side and opening the valves simultaneously. Sample frequency should be one co-located sample for every 20 field samples. The sampling and analysis protocol is listed in Table 2.

TABLE 2
Sampling and Analysis Protocols

Sample Type	Number of Samples	Matrix	Parameter/Fraction	Sample Container	Sample Preservation	Analytical Method [1]	Method Detection Limit	Holding Time
Residential Basements	**	Air	Volatile Organic Compounds (VOCs)	(1) SUMMA Canister	----------	*TO-15*	.04 - 0.26 ppbv	30 days

Legend:
[1] U.S. EPA. January 1999. Compendium Method *TO-15: Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specialty-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)* from the *Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air.* Second Edition.

4.3 Sampling Methods Requirements

4.3.1 Standard operating procedures

As previously stated, all sampling will be in accordance with the *U.S. EPA Region II CERCLA Quality Assurance Manual*; and *U.S. EPA Superfund Program Representative Sampling Guidance* OSWER Directive 9360.4-10, Interim Final, EPA/540/R-95/141, Office of Emergency and Remedial Response (OERR), Washington, D.C. Furthermore, the specific Standard Operating Procedure (SOP) utilized for air sampling, as presented in Appendix C, is the *U.S. EPA ERT SOP #1704: Summa Canister Sampling.*

4.3.2 Sample collection methodology

All samples including QA/QC samples will be collected by *(insert name of contractor or DESA/HWSB/SCST, as appropriate)* from the buildings in the area of the site. The total number of samples includes: # samples in addition to laboratory quality control samples (i.e. field co-located sample) and ambient air sample. Samples will be collected by placing a SUMMA™ canister in the appropriate location with a pre-set valve for twenty-four hour sampling. The sampler will open the canister, ask the resident questions from the *Questionnaire* and survey the chemicals found in the basement/crawlspace. The canisters will then be closed and retrieved after twenty-four hours passes.

4.3.3 Sample Containers, Volume, Preservation, and Holding Times

Sample container type, volume, preservation, and holding times are dependent upon analytical parameter and fraction and are matrix specific. The following table outlines the sample container type, volume, preservation, and holding times for samples to be collected on-site.

Analytical Parameter/Fraction	Sample Container	Required Sample Volume	Sample Preservation	Holding Time
VOC	(1) SUMMA™ canister	6 lts.	---------	30 days to analyze

4.3.4 Field measurement data collection

Canister Sample Data Sheets, *Questionnaires*, *Chain of Custody* and the field notebook will be completed for each sample collected. The *Questionnaire* will record sample location; residential information; time of sample drop off and pick up; conditions in the room; laboratory sample number; laboratory sample analysis and sample collection notes and/or observations. An example of the *Questionnaire* is presented in Appendix D. The *Canister Sample Data Sheet* will be provided by the laboratory and records the sample location, sampling period, initial and final sample time and comments. An example of this data sheet can also be found in Appendix D. The *Chain of Custody* is a record of the sample location, sample canister and valve numbers and

time and date of the sample. An example of the *Chain of Custody* can be found in Appendix D. The field notebook will be completed as provided for in Section 8.4: Data Quality Management of the QAPP.

4.3.5 Sampling Equipment Decontamination

Air samples will be collected using SUMMA™ canisters. The laboratory will perform decontamination of the canister prior to sending them to U.S. EPA and will provide EPA with documentation certifying them as clean. This documentation should be included on the data sheets as well. *In general, 10% of canisters should be certified as clean, in rare cases, a higher percentage of canisters may require certification as clean. This will be based on individual project requirements, contact DESA for assistance.* The SUMMA™ canisters will be cleaned according to:

- *TO-15: Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specialty-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)* from the *Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air*; and

- *U.S. EPA Region II CERCLA Quality Assurance Manual.*

4.3.6 Management of Investigative-Derived Wastes (IDW)

There will be minimum waste due to the nature of the sampling event. There will be no personnel protective equipment to be disposed.

5.0 Sample Custody

5.1 Special Training Requirements/Certification

To perform the operations of this sampling event, sampling personnel may be dealing with remedial or removal activities on-site. This could expose sampling personnel to potential occupational environmental hazards. As a result, it is important for field personnel to be familiar with:

- Identifying methods and procedures for recognizing, evaluating and controlling hazardous substances.
- Identifying concepts, principles, and guidelines to properly protect field personnel.
- Discussing regulations and action levels to ensure the health and safety of field oversight personnel.
- Discussing the fundamentals needed to develop organizational structures and standard operating procedures to mitigate potential environmental hazards.
- Demonstrating the selection and use of dermal and respiratory protective equipment.
- Demonstrating the selection and use of direct-reading air monitoring instrumentation (if applicable)
- Review of any site-specific Health and Safety Plans

In practice, not all of the potential environmental hazards which may be inherent to a site can be readily anticipated. To mitigate these circumstances, field personnel must learn, follow, and enforce the published rules governing occupational health and safety. In addition, they must maintain awareness and exercise common sense and good judgement when confronting possible unsafe situations.

All training and certification requirements are to be undertaken in accordance with Occupational Safety and Health Administration (OSHA) regulation 29 CFR 1910.120 and U.S. EPA Order 1440.2.

5.2 Sample Handling and Custody Requirements

5.2.1 Sample handling and shipment

Canister Sample Data Sheets, *Chain of Custody* and the field notebook will be completed for each sample collected. All field and sample documents will be legibly written in indelible ink. Any corrections or revisions will be made by lining through the original entry and initialing the change. The *Canister Sample Data Sheet* will be provided by the laboratory and records the sample location, sampling period, initial and final sample time and comments. An example of this data sheet can also be found in Appendix D. The *Chain of Custody* is a record of the sample location, sample canister and valve numbers and time and date of the sample. An example of the *Chain of Custody* can be found in Appendix D. The field notebook will be used by field personnel to record all aspects of sample collection and handling, visual observations, and field measurements. The field notebook is a descriptive notebook detailing site activities and observations so that an accurate, factual account of field procedures may be reconstructed. The sample team or individuals performing a particular sampling activity are required to maintain a field notebook. This field notebook will be a bound weatherproof logbook that shall be filled out at the location of sample collection immediately after sampling. All entries will be signed by the individuals making them. At a minimum, the notebook will contain sample particulars including sample number, collection time, location, descriptions, methods used, daily weather conditions, field measurements, name of sampler(s), sample preservation, names of contractor/ subcontractor personnel, and other site-specific observations including any deviations from protocol.

A canister tag, also provided by the laboratory, will be securely affixed to each SUMMA™ canister and include only the canister identification number and the valve number and flow rate. The sample tags will be secured to the canister itself. Once sealed, samples will be placed back into the cardboard boxes that they were received in. Custody seals and strapping tape will then be affixed to the boxes.

Samples will be packaged and shipped in accordance with USEPA, Department of Transportation (DOT), and International Air Transport Association (IATA) procedures. All samples will be shipped within 24 hours of collection to the laboratory

5.2.2 Sample custody procedures

Standard U.S.EPA Chain-of-Custody Procedures will be followed for all samples and be in accordance with the U.S.EPA Region II *CERCLA Quality Assurance Manual.* The *Chain of Custody* records will be maintained from the time of sample collection until final disposition. Every transfer of custody will be noted and signed for and a copy of the record will be kept for each individual who has signed it. The *Chain of Custody* records will include, at a minimum, sample identification number, number of samples collected, sample collection date and time, sample type, sample matrix, sample container type, sample analysis requested, sample preservation, and the name(s) and signature(s) of samplers and all individuals who have had custody. An example can be found in Appendix D. Canister tags will include the canister identification number and the valve number and flow rate. Custody seals will demonstrate that a sample container or cooler has not been opened or tampered with. The sampler will sign and date the custody seal and affix it to the container and/or cooler in such a manner that it cannot be opened without breaking the seal.

6.0 Calibration Procedures and Frequency

6.1 Instrument Calibration and Frequency

Laboratory analytical equipment calibration will follow procedures as specified under U.S. EPA, Compendium Method *TO-15: Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specialty-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)* from the *Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air* , which can be found as Appendix B.

7.0 Analytical Procedures

7.1 Analytical Methods Requirements

The analytical method, equipment and method performance requirements for analysis will be according to *TO-15: Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specialty-Prepared Canisters and Analyzed by Gas Chromatography/ Mass Spectrometry (GC/MS)* from the *Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air* , which can be found as Appendix B.

The minimum detection limits using Method TO-15 for this project are presented in the table below (Selective Ion Mode may be needed). (*Note that some compounds may have detection limits above their levels of interest, even in SIM Mode. Therefore add the following*). For compounds that have detection limits above their level of interest, results will be compared to the 10^{-5} and 10^{-4} excess lifetime cancer risk levels, as provided in Table 1 of this document.

Table 3 - Minimum Detection Limits

Chemical	Reporting Limits (in ug/m3)	Minimum Detection Limit (in ug/m3)

8.0 Data Reduction, Validation, and Reporting

8.1 Data Review, Validation and Verification Requirements:

Standard methods and references will be used as guidelines for data reduction and reporting. All data generated by the laboratory will be reported in standard deliverable format.

8.2 Validation and Verification Methods

All data will be validated by (*insert name of validation contractor or lab as appropriate*).

8.3 Data Acquisition Requirements

Data acquisition from non-direct measurements such as data from databases or literature is not anticipated at this time. Therefore, this is not applicable.

8.4 Data Quality Management

All project data and information must be documented in a format that is usable by project personnel. This section of the QAPP describes how project data and information will be documented, tracked, and managed from their generation in the field to final use and storage in a manner that ensures data integrity and defensibility. All field and sample documents will be legibly written in indelible ink. Any correction or revisions will be made by lining through the original entry and initialing the change.

The following field and sample documentation will be maintained.

- The field notebook is a descriptive notebook detailing site activities and observations so that an accurate, factual account of field procedures may be reconstructed. The sample team or individuals performing a particular sampling activity are required to maintain a field notebook. This field notebook will be a bound weatherproof logbook that shall be filled out at the location of sample collection immediately after sampling. All entries will be signed by the individuals making them. At a minimum, the notebook will contain sample particulars including sample number, collection time, location, descriptions, methods used, daily weather conditions, field measurements, name of sampler(s), sample preservation, and other site-specific observations including any deviations from protocol.

- Field data sheets, i.e., *Questionnaire, Canister Field Data Sheet*, and corresponding sample labels are used to identify samples and document field sampling conditions and activities. The field data sheets will be completed at the time of sample collection and will include the following: sample location; residential information; drop off and pick up time; sample environment description; laboratory sample number; laboratory sample analysis; and sample collection notes and/or observations. An example of the *Questionnaire* and the *Canister Field Data Sheet* are presented in Appendix D. Sample labels will be securely affixed to the sample container and include only the sample identification number as per Protocol.

- Canister tags will be securely affixed to the SUMMA™ canister and include the canister identification number and the valve number and flow rate. The tags will be fixed to the top of the canisters to prevent sample identification problems.

- The *Chain of Custody* records will be maintained from the time of sample collection until final disposition. Every transfer of custody will be noted and signed for and a copy of the record will be kept for each individual who has signed it. The chain-of-custody records will include, at a minimum, sample identification number, number of samples collected, sample collection date and time, sample type, sample matrix, sample container type, sample analysis requested, sample preservation, and the name(s) and signature(s) of samplers and all individuals who have had custody. An example of the chain of custody that will be used at this site can be found in Appendix D.

- Custody seals will demonstrate that a sample canister or box has not been opened or tampered with. The sampler will sign and date the custody seal and affix it to the box in such a manner that it cannot be opened without breaking the seal.

- Procedures are provided for project personnel to make changes, take corrective actions and document the process through Corrective Action Request Forms. Corrective action can occur during field activities, laboratory analysis, data validation, and data assessment. For further information, refer to Section 13.0: Corrective Action.

9.0 Internal Quality Control Checks and Frequency

9.1 Quality Control Requirements

As previously stated, to assess data quality, PARCC (Precision, Accuracy, Representativeness, Completeness, and Comparability) parameters will be utilized. These essential data quality elements are delineated as follows.

9.1.1 Data precision

Precision is defined as a measure of the reproducibility of individual measurements of the same property under a given set of conditions. The overall precision of measurement data is a mixture of sampling and analytical factors.

9.1.1.1 Analytical precision

The measure of replicate precision is the absolute value of the difference between replicate measurements of the sample divided by the average value and expressed as a percentage as follows:

$$\text{Percent difference} = \frac{|X_1 - X_2|}{X} \times 100$$

where: X_1 - First measurement value
X_2 - Second Measurement value
X - Average of the two values

Factors that affected the precision of the measurement are: molecular weight, water solubility, polarizability, etc. A primary influence is the concentration level of the compound. A replicate precision value of 25 percent can be achieved for each of the target compounds. For more information, refer to Compendium Method *TO-15: Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specialty-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)* which can be found as Appendix B.

Table 4 located on page 21 of this QAPP depicts the analytical precision for the analytical methods chosen in terms of estimated relative percent difference (RPD).

9.1.1.2 Sample collection precision

Sample collection precision will be assessed by collecting field co-located samples. The field co-located samples will be used to evaluate errors associated with sample heterogeneity, sampling methodology and analytical procedures. The analytical results from these samples will provide data on the overall measurement precision.

9.1.2 Data accuracy

Accuracy is defined as the degree of difference between measured or calculated values and the true value. The closer the numerical value of the measurement comes to the true value, or actual concentration, the more accurate the measurement is. It is difficult to measure accuracy for the entire data collection activity. Sources of error are the sampling process, field contamination, preservation, handling, sample matrix, sample preparation and analysis techniques.

9.1.2.1 Analytical accuracy

A measurement of analytical accuracy is the degree of agreement with audit standards. It is defined as the difference between the nominal concentration of the audit compound and the measured value divided by the audit value and expressed as a percentage as follows:

$$\text{Audit Accuracy, \%} = \frac{\text{Spiked Value - Observed Value}}{\text{Spiked Value}} \times 100$$

For more information, refer to Compendium Method *TO-15: Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specialty-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)* which can be found as Appendix B.

Table 4 on page 21 located in this QAPP depicts both the analytical precision and accuracy for the analytical methods chosen in terms of estimated percent recovery.

9.1.2.2 Sample collection accuracy

Method blanks will be used to monitor possible laboratory contamination. The laboratory shall provide results for the method blanks or the blank analysis for the canisters prior to use.

9.1.3 Data Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, or and environmental condition. For the purposes of this QAPP, data representativeness is the minimum number of samples that are needed to evaluate the indoor air environment. Representativeness is a qualitative parameter which is most concerned with the proper design of the sampling program and proper laboratory protocol. The representativeness criterion is best satisfied by making certain that sampling locations are selected properly and a sufficient number of samples are collected. Therefore, data representativeness will be assessed by collecting field replicate samples. The field replicates are by definition equally representative of a given point in space and time. The laboratory also collects two samples from one canister; the sample and a duplicate. In addition, as previously stated, data representativeness will be satisfied by ensuring that the sampling program is followed according to the *U.S. EPA Region II CERCLA Quality Assurance Manual*; and the *U.S. EPA Superfund Program Representative Sampling Guidance* for soil, Volume 1. Also, proper sampling techniques will be used in accordance with the U.S. EPA. *Environmental Response Team (ERT) Standard Operating Procedure (SOP) #1704: Summa Canister Sampling.* The SOP is enclosed in Appendix C.

9.1.4 Data Comparability

Comparability is defined as the confidence with which one data set can be compared to another. Field and laboratory procedures greatly affect comparability. Therefore, to optimize comparability, sampling and analysis for all samples will be performed using standardized analytical methods and adherence to the quality control procedures outlined in the methods and this QAPP. Therefore, the data will be compared.

9.1.5 Data Completeness

Completeness is defined as the measure of the amount of valid data obtained from a measurement system compared to the amount that was expected to be obtained under normal conditions. Data completeness will be expressed as the percentage of valid data obtained from measurement system. For data to be considered valid, it must meet all the acceptable criteria

including accuracy and precision, as well as any other criteria specified by the analytical method used. Therefore, all data points critical to the sampling program in terms of completeness will be 100% validated by (*insert name of validation contractor or lab, as appropriate*). For the purposes of this QAPP completeness is the successful collection of all samples specified in a particular structure. If a specified sample is not collected then that data set would not be considered complete

10.0 Performance and Systems Audits

10.1 Assessments and Response Actions

No performance audit of field operations is anticipated at this time. If conducted, performance and systems audits will be in accordance with:

- U.S. EPA (Environmental Protection Agency) Region II. April 2000. *SOP SCST-1, Standard Operating Procedure (S.O.P.) for Performing Oversight of CERCLA Field Operations.* Revision 0. Division of Environmental Services and Assessment, Hazardous Waste Support Branch, Hazardous Waste Support Section, Edison, NJ.

11.0 Preventive Maintenance

11.1 Instrument/Equipment Testing, Procedures & Scheduled Inspection and Maintenance Requirements

As previously stated, calibration and preventative maintenance of analytical laboratory equipment will be conducted by the laboratory.

11.2 Inspection/Acceptance Requirements for Supplies and Consumables

Due to the nature of air sampling rinsate and trip blanks are not applicable. SUMMA™ canister quality control includes calibration of the canister itself, method blanks performed by the laboratory and laboratory control samples, also performed by the laboratory. Canisters will be cleaned to the limit specified in the applicable method (e.g., TO-15). *In general, 10% of canisters should be certified as clean, in rare cases, a higher percentage of canisters may require certification as clean. This will be based on individual project requirements, contact DESA for assistance.*

12.0 Specific Routine Procedures/measurement Parameters Involved

12.1 Reconciliation with Data Used to Assess PARCC for Quality Objectives Measurement

Sample collection precision will be evaluated by collecting and analyzing a co-located sample. The co-located samples will be used to evaluate errors associated with sample heterogeneity, sampling methodology and analytical procedures. The analytical results from the co-located sample will provide data on the overall measurement precision. Precision will be reported as

the relative percent difference (RPD) for two measurements. The acceptance criteria for the co-located samples are located in Table 4, below. The laboratory also collects two samples from one canister; the sample and a duplicate.

Data will be generated through the collection of air samples in appropriate locations (e.g., basements/crawlspaces) in the area of the Site. This data will be used to determine the location and concentration of contamination in the structure, the extent of contamination, evaluate potential health threats, and determine environmental impacts while identifying clean-up criteria.

TABLE 4: PRECISION AND ACCURACY

Sample Parameter/Fraction	Sample Matrix	Analytical Method	Method Detection Limit[1]	Quantitation Limit	Estimated Accuracy[2]	Accuracy Protocol	Estimated Precision[2]	Precision Protocol
Volatile Organic Compounds (VOCs)	Air	*TO-15*	0.04 -0.26 ppbv	ppbv	< or = 30%	Non-RAS	< or = 25%	Non-RAS

[1] The method detection limits were provided by the laboratory.
[2] *TO-15: Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specialty-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)*

13.0 Corrective Action

13.1 Assessments and Response Actions

Procedures are provided for project personnel to make changes, take corrective actions and document the process through Corrective Action Request Forms. Corrective action can occur during field activities, laboratory analysis, data validation, and data assessment.

Corrective action in the field may be necessary when the monitoring network design is changed. A change in the field includes: increasing the number or type of samples or analyses; changing sampling locations; and/or modifying sampling protocol. When this occurs, the project officer or project QA officer will identify any suspected technical or QA deficiencies and note them in the field logbook. The project QA officer will be responsible for assessing the suspected deficiency and determining the impact on the quality of the data. Development of the appropriate corrective action will be the responsibility of the RPM.

Data validation and data assessment corrective action will be in accordance with the *U.S. EPA Region II CERCLA Quality Assurance Manual.*

14.0 QA Reports to Management

14.1 Distribution List

The following project personnel will receive copies of the approved QAPP and any subsequent revisions.

Project Personnel	Title
	Remedial Project Manager
	Project Officer
	Quality Assurance Officer

14.2 Reports to Management

The data collected as a result of sampling activities; will be organized, analyzed and summarized in a final project report that will be submitted to the RPM according to the Project Schedule. The report will be prepared by the project officer or project quality assurance officer and include appropriate data quality assessment.

APPENDIX A

♦SITE MAPS

APPENDIX B

U.S. Environmental Protection Agency (EPA)

Compendium Method *TO-15:*
Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specialty-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)
from the
Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air
Second Edition

Center for Environmental Research Information

Office of Research and Development. Cincinnati, OH
January 1999

APPENDIX C

U.S. EPA *Environmental Response Team (ERT)*

Standard Operating Procedure (SOP)
#1704: SUMMA Canister Sampling

July 1995

APPENDIX D

Example *Questionnaire*

Example *Canister Field Data Sheet*

and

Example *Chain of Custody*

INDOOR AIR QUALITY BUILDING SURVEY

Occupant/Building Name:_____ Date:_____

Address:_____

Telephone No. Home_____ Work_____ Best time to contact_____

Completed by:_____

Canister #_____ Time Started:_____ Time Stopped:_____
Location:_____
Canister #_____ Time Started:_____ Time Stopped:_____.
Location:_____
Canister #_____ Time Started:_____ Time Stopped:_____
Location:_____
Canister #_____ Time Started:_____ Time Stopped:_____
Location:_____

Daily Weather Conditions: Temperature _____ Relative Humidity _____

Are you the ❑Owner, ❑ Renter, ❑Other (please specify)_____of this Home/Structure?

Total number of occupants/persons at this location?_____, Children under age 13 ____, Children age 13-18 _____ .

How long have you lived at this location? _____ .

Do you regularly use air fresheners? ❑Yes, ❑No.

Do you regularly use or work in a dry cleaning service (check only one box)? ❑Yes, use dry-cleaning regularly (at least weekly), ❑Yes, use dry-cleaning infrequently (monthly or less)? If yes, when was the last time you brought home dry cleaned clothes? _____ ❑Yes, work at a dry cleaning service, ❑No

Does anyone in your home use solvents at work? ❑Yes, ❑No. If yes, are the work clothes washed at home? ❑Yes❑No

What is the source of your drinking water? ❑Public water supply, ❑Private well, ❑Other_____

Do you have a private well for purposes other than drinking? ❑Yes, ❑No

Do you have a septic system? ❑Yes, ❑No, ❑ Not used, ❑ Unknown
Do you have standing water outside your home (pond, ditch, swale)? ❑Yes, ❑No

Where is the washer/dryer located? ❑Basement, ❑Upstairs utility room, ❑Garage, ❑Other_____

Do you have air conditioning? Yes ❑ No ❑. If yes, please check the appropriate type(s) ❑Central air conditioning, ❑Window air conditioning unit(s), ❑Other ❑, please specify_____

Do you use any of the following? Room fans ❑, Ceiling fans ❑, Attic fan ❑

Water Heater Type: ❑Gas, ❑Electric, ❑Other_____

Water heater location: ❑Basement, ❑Upstairs utility room, ❑Garage, ❑Other_____.

What type of cooking appliance do you have? ❑Electric, ❑Gas, ❑Other_____.

Type of Home/Structure (check only one): ❑Single Family Home, ❑Duplex, ❑Condominium, ❑Townhouse, ❑office, ❑commercial, ❑industrial, ❑Other_____

Number of floors below grade: _____, at or above grade:_____

Does this structure have a ❑Basement, ❑Crawlspace or Slab?

Basement/Crawlspace size:_____ft3

Number of rooms in the basement: _____

OUTSIDE SOURCES	**Yes**	**No**	**Comments/Locations**
Garbage dumpsters			
Heavy motor vehicle traffic			
Construction activities			
Nearby industries (identify)			
UST/AST (gasoline, heating fuel)			
BASEMENT SURVEY			
Wall construction (cinder block, poured concrete,sheet rock, paneling, etc.)			type: **condition:**
Floor Construction (earthen, slab, floating, etc)			type: **condition:**
Number of windows present on each wall and size			North: East: South: West:
Was basement painted recently? oil-base or latex paints			date: type of paint:
Is the basement ❑finished ❑or unfinished? If finished, how many rooms are in the basement?_____	**YES**	**NO**	

Does the basement have any of the following? (check all that apply) ❑, Sump ❑, Floor drain ❑, Other hole/opening in floor ❑ (describe)_____			**Notes:**
Describe the location of any above appurtenances:			**Notes:**
Do pipes connect to the sump? (french drain?)			
New flooring in basement?(list type - carpet, tile)			
Has glue been used for construction or hobbies?			
New furniture added to basement			type: date:
Staining on floors/walls			
	YES	**NO**	
Moisture visually present in the basement			
Pipes running through walls, floor (conduits-describe, give FID/PID/CGS readings)			
Odors detected by inspector			
Basement used as living space			
Time occupants spend in basement (hours/day/per person)			
Items stored in basement: solvents			
gasoline			
paint/thinners			
polishes/waxes			
insecticides			
kerosene			
household cleaning products			
mothballs			
other items?			
NOTES: _____ _____ _____			
FIRST FLOOR SURVEY			
Wall construction (cinder block, sheet rock, paneling, etc)			type: condition:

Was painting done recently? oil-base or latex?			date: type of paint:
New flooring on 1st floor? (list type - carpet, tile)			
Has glue been used for construction or hobbies?			
New furniture added to 1st floor? (list type - carpet. tile)			type: date:
Staining on floors/walls			
Pipes running through walls, floor (describe)			
Odors detected by inspector			
	YES	**NO**	
Items stored on this floor			
	YES	**NO**	
solvents			
gasoline			
paint/thinners			
polishes/waxes			
insecticides			
kerosene			
household cleaning products			
mothballs			
other items?			
NOTES:			

PERSONAL ACTIVITIES

Does anyone in the building smoke?			
approx. number of tobacco products per day, per person			
List hobbies of Residents			
Any house pets?			

MISCELLANEOUS					
Have the occupants ever noticed unusual odors inside or outside the building ?			describe: location:		
Known spill outside or inside building (Specify location)					
Type of heating used in building oil - (identify the location and age of the storage tank)					
natural gas					
electric					
other (specify)					
Is the heating unit properly vented?					
Water damage or standing water in building (historic or current)					
Fire damage to building			date:		
Pest control applications			date:		
	YES	**NO**			
FIELD SCREENING RESULTS	**FID**	**PID**	**CGI**	**CO2**	**Rel. Hum**
Basement					
First Floor					
Additional Floors					
Other (specify)_____					
NOTES:					

NOTES:_____

APPENDIX E

Resident Instructions

Example *Access Agreement*

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION II

The United States Environmental Protection Agency (EPA) is conducting an investigation of indoor air quality in and around residential homes in your area. Concerns over contamination in the ground and ground water, allegedly linked to a (*type of site*), has initiated this action. As a result, EPA is collecting indoor air samples from residences in the vicinity of the site.

INDOOR AIR SAMPLING

Why is the United States Environmental Protection Agency collecting air samples from my basement?

To determine if contamination in the ground is affecting homes, EPA is testing indoor air quality. As a result, EPA personnel will collect a sample of the air from your basement and analyze it at no charge to you. The sampling event is to determine whether you and/or your family are at risk of breathing harmful contaminants that may be associated with subsurface contamination.

How is the air being collected from my basement?

A device, known as a Summa Canister, will be placed in your basement to draw in air for a period of 24 hours. Initially, the summa canister is under a vacuum. The summa canister will be opened in your basement and air will flow into the canister for 24 hours. Air will not flow out of the device. These canisters are completely safe and pose no danger to you or your children.

What should I <u>NOT DO</u> so that I do not damage or disrupt the summa canister and provide the proper environment for the sampling event?

Summa canisters are particularly sensitive, and can be damaged very easily. This is why it is important to practice the following precautions at lease 24 hours prior to sampling:

-do not smoke in the basement or house
-do not open the basement door
-do not bring dry-cleaning into the house
-do not use solvents of any type
-do not open your basement windows
-do not utilize fans or vents in the basement
-do not paint or clean paint brushes
-do not polish your shoes

-do not pour gasoline, liquid fuels or solvent inside your house or attached garage
-do not park your car inside your attached garage
-do not start internal combustion equipment inside your house or attached garage
-do not run the clothes washer or dryer if in the basement
-do not move the canister(s) under any circumstances.

Who is doing the analysis of the samples?

Although EPA personnel will be providing oversight of the work conducted on your premises, EPA contractors will be collecting the air samples and a private laboratory has been contracted to perform the analytical procedures.

EPA apologizes for any inconveniences that may occur as part of this sampling event. However, your cooperation and understanding is greatly appreciated. Remember, we are doing this for the protection of your health, as well as the surrounding community's.

Please call (*RPM*) at **** with any questions about the sampling itself or any additional questions you may have. Thank you for your help and cooperation.

CONSENT TO ACCESS

The purpose of this Consent to Access is for the U.S. Environmental Protection Agency (EPA) to secure access to this property.

By executing this Consent to Access, I hereby consent to and authorize employees, authorized agents, contractors and subcontractors of EPA to enter onto and move about all areas of the property. I understand that the work that will be performed at the property may include the following activities: 1) collection and analysis of indoor air samples collected over a 24-hour period, 2) assessment and inventorying of containers and their contents as necessary to determine the potential impact to the air and 3) assessment and inventorying of the residential structure.

This written permission is given by me voluntarily with knowledge of my right to refuse and without threats or promises of any kind.

I, the undersigned, am authorized to represent the owner of the property.

_____ _____

Signature Date

_____

Name of Property Owner

_____ _____

Name of Authorized Official (Please Print) Title (Please Print)

_____

Address of Property in Which Interest Lies

APPENDIX B
MAP OF THE SITE

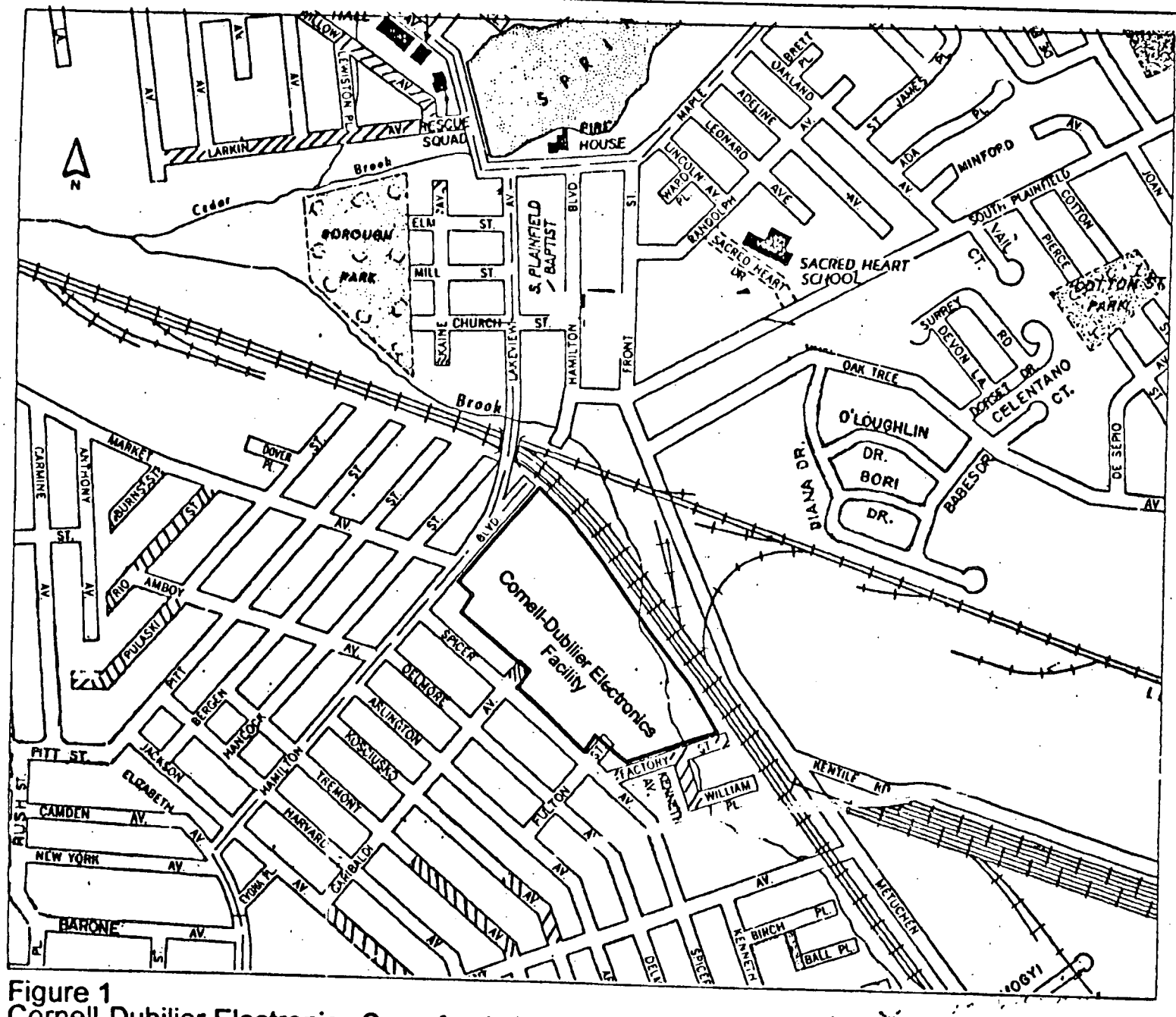
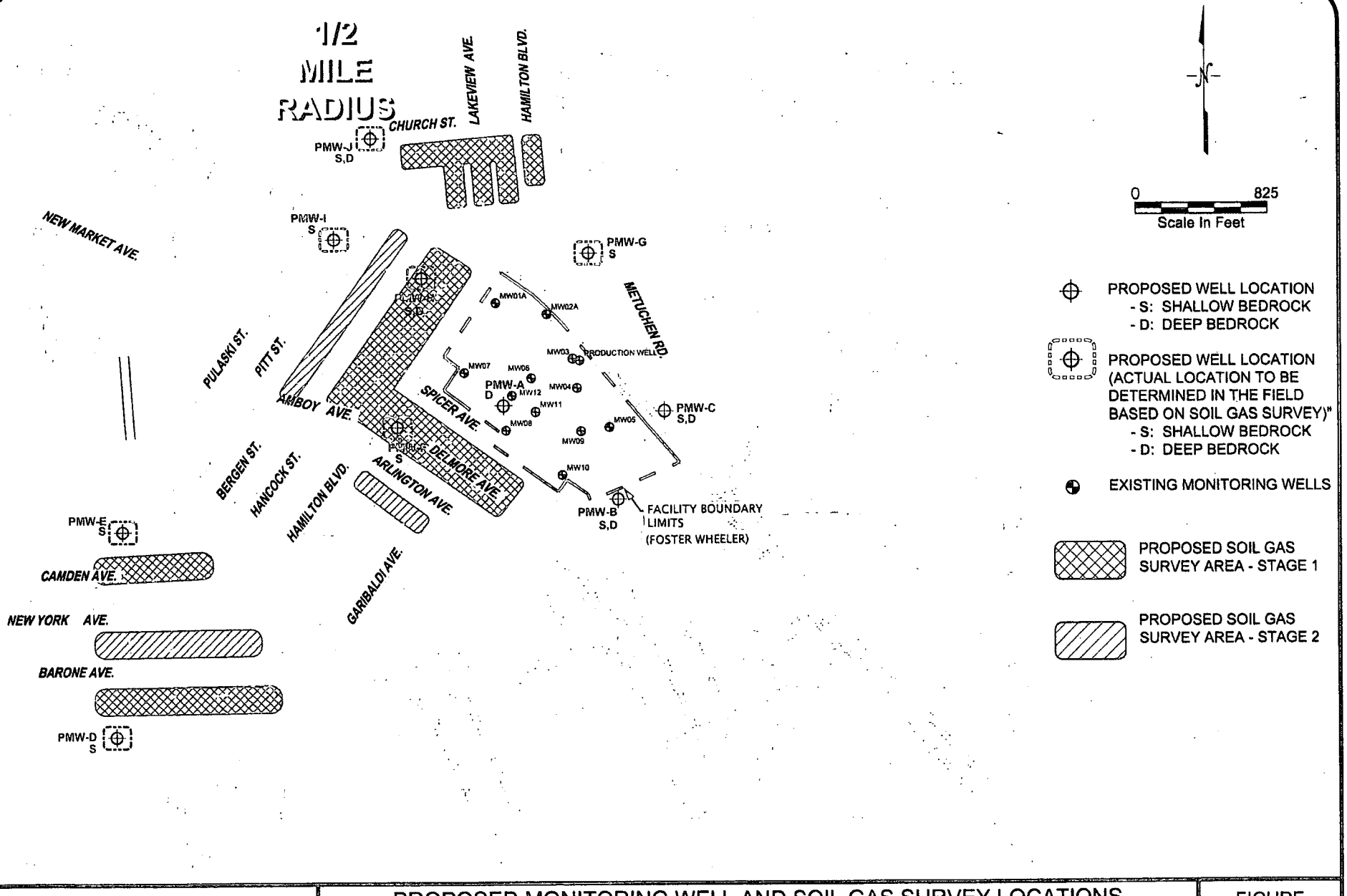


Figure 1
Cornell-Dubilier Electronics Superfund site
Site Location Map



DRAFTED BY: TSP\ TSP | DATE: 4/5/05

PROPOSED MONITORING WELL AND SOIL GAS SURVEY LOCATIONS

OPERABLE UNIT 3 - REMEDIAL INVESTIGATION

CORNELL-DUBILIER ELECTRONICS, INC. SUPERFUND SITE

SOUTH PLAINFIELD, NEW JERSEY

FIGURE 1

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